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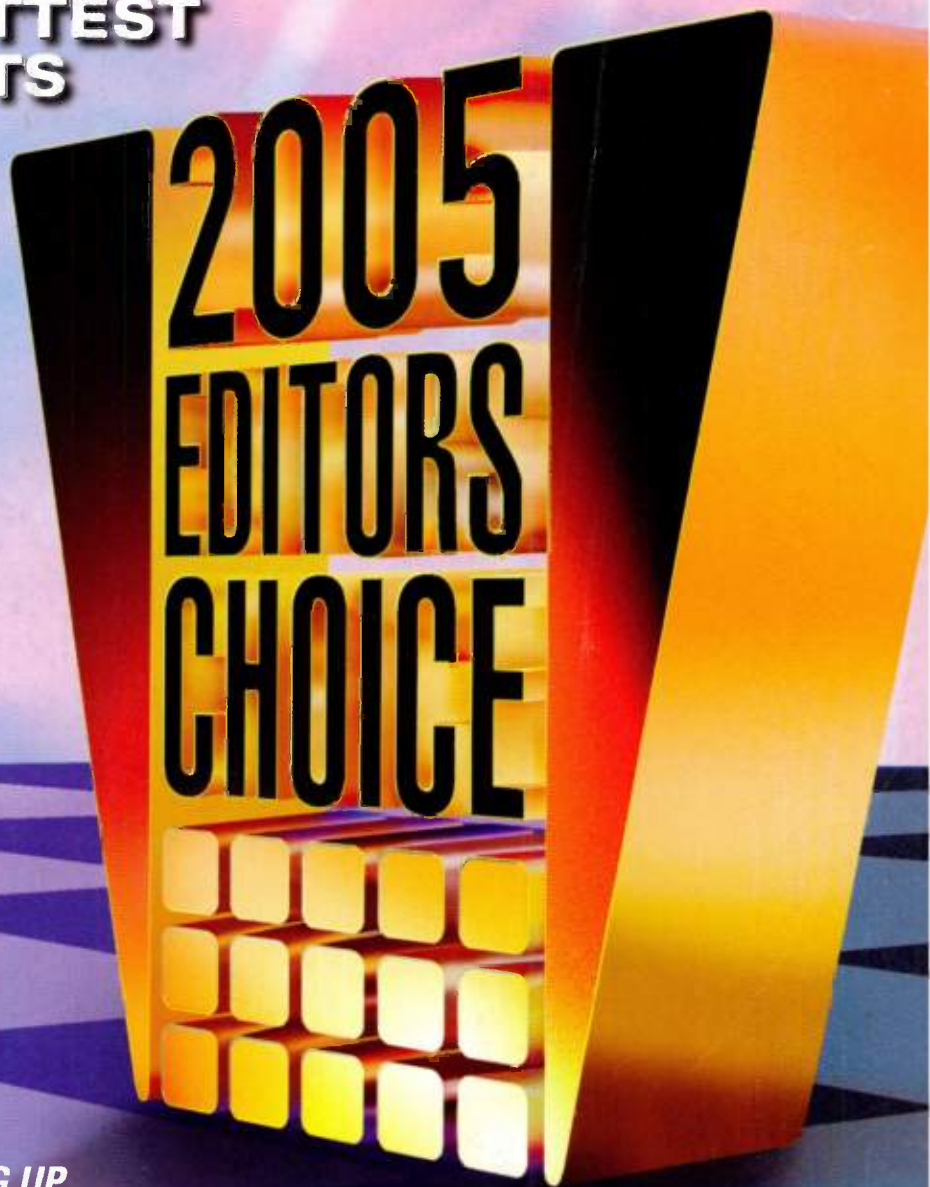
January 2005

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- NATIVE INSTRUMENTS
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- DSI POLY EVOLVER
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AND 5 MORE



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VINTAGE SOUNDS WITH*

John Frusciante

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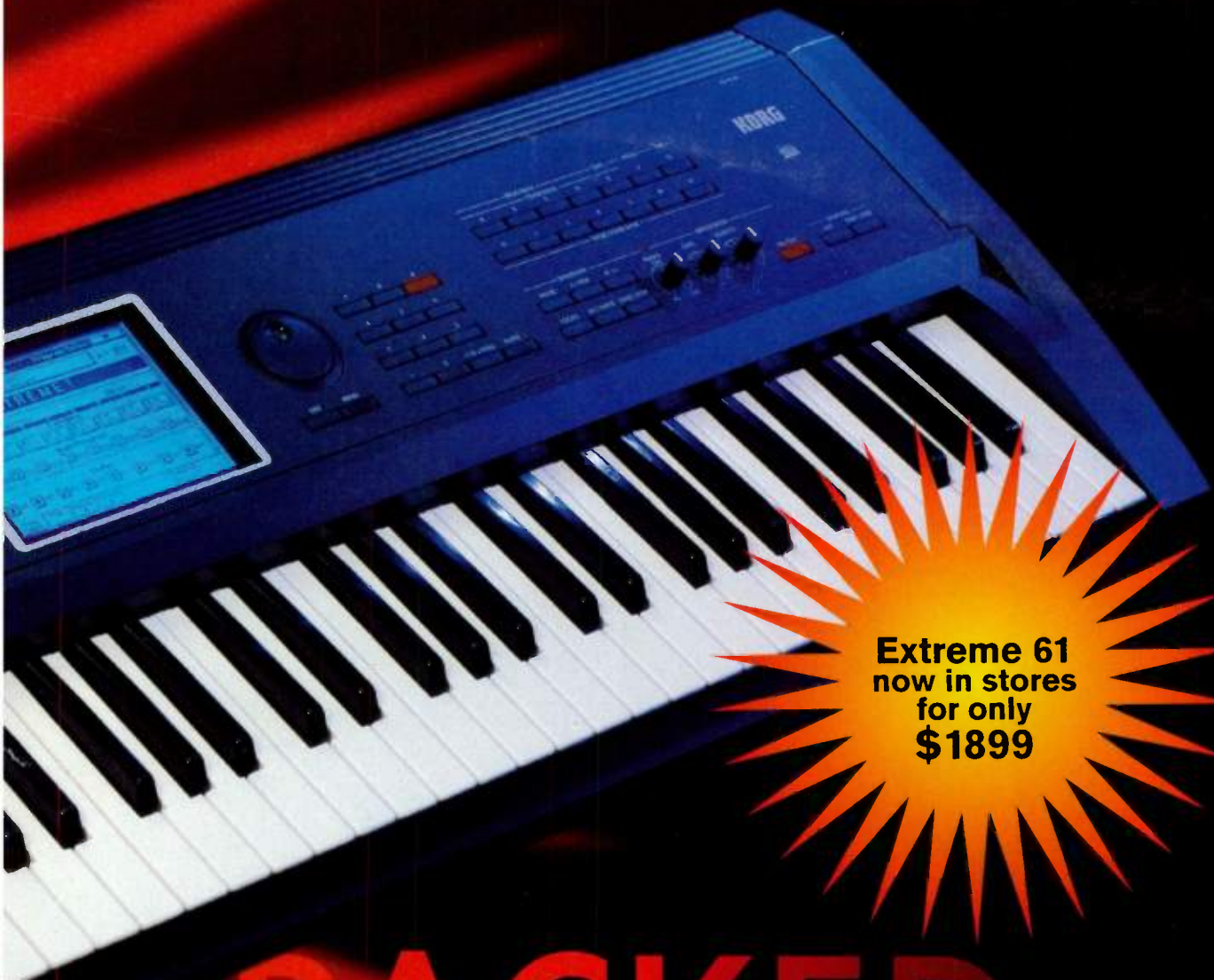
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Dangling Dongles

It all started when I wanted to check out a new version of a host program that required a dongle. I needed to work at the EM office, using my PowerBook, and when I went to plug in the dongle, I couldn't find it. So I booted up another host program that doesn't require a hardware key, and I got my job done. Still, until I found that doggone dongle (weeks later), my legal, registered software was useless. I was furious!

Why use dongles? Manufacturers disagree on that, but most admit that challenge-and-response copy protection is a lot easier to hack than a dongle. So dongles are seemingly here to stay until something better is developed.

Okay, then, why not use dongles? The universal complaints are:

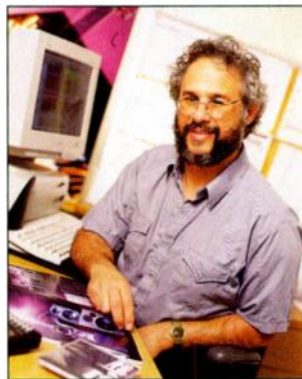
- Because there is no universal standard, you may need several dongles and a USB hub in order to use programs from multiple developers.
- If you lose or break most dongles, your software is useless until you can get a replacement. Replacing a dongle is not always free, and you've already paid for the software, but the biggest problem is downtime.

As it turns out, all dongles are not created equal: Pace's iLok has gone a long way to answer the complaints about dongles. Multiple licenses can be kept on one iLok key and can be managed from the iLok.com Web site. If you buy a second iLok, you can move licenses for free between iLoks via the iLok.com database, or you can store them all on one key and keep the other as a spare. If every dongle-protected program you use employs an iLok, that solves the problem of multiple dongles.

Several companies, however, use less-capable dongles. In effect, they pay an engineer to reinvent the wheel, and users are stuck with multiple protruding pieces of plastic. Reliable sources tell me that half of all tech-support calls for one major software developer that uses a proprietary dongle are about dongle-related problems. That probably costs a lot more than the iLok license fees!

There remains the problem of downtime when you lose or break a dongle. Again, Pace has done a good job of dealing with that, although the system needs refining. With Pace's \$30-per-year Zero Down Time (ZDT) service, you just go to iLok.com and download temporary two-week licenses into your spare key. That way, you are up and running in minutes. You still have to restore your permanent licenses, and that's where refinement is needed. Some developers allow Pace to obtain your new permanent licenses for you, which is ideal. A few companies, however, require you to contact them directly, which complicates things. I think many people would pay more for ZDT if all registered iLok licenses were automatically restored. One saved session pays for that.

So developers, if you insist on using a dongle, do your paying customers a favor: use iLok, and let Pace work with its ZDT customers directly to restore missing licenses. You can protect your software and be kind to your customers, too.



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By Mike Levine

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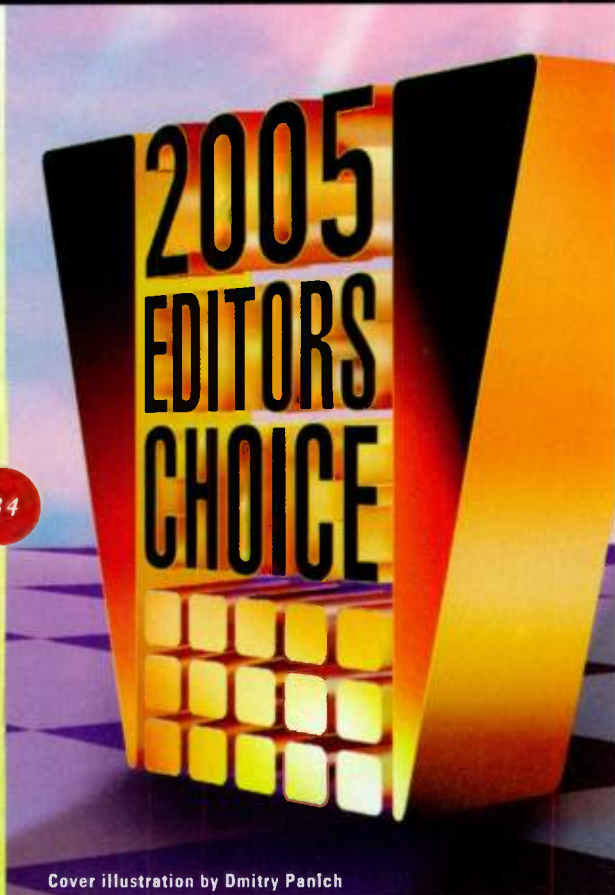
We're delighted to present our highest accolades to the 25 finest products we tested during the past year.

By the EM Staff

64 PRODUCTION VALUES: JOHN FRUSCIANTE'S CREATIVE EXPLOSION

Red Hot Chili Peppers' lead guitarist, John Frusciante, recorded a staggering six solo CDs over the past year. In this exclusive interview, Frusciante discusses what drove him to this remarkable level of creative output, his extreme views on analog versus digital audio production, and his fondness for vintage synthesizers.

By Paul Tingen



Cover illustration by Dmitry Panlch



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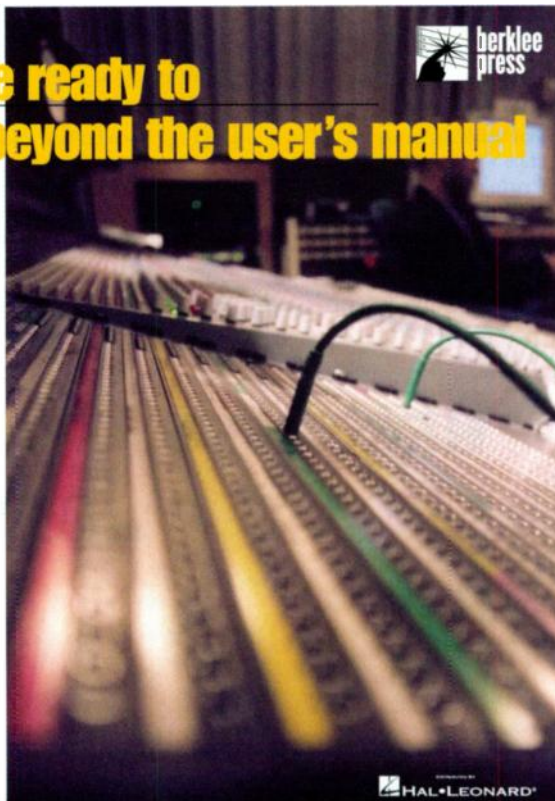
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JULIA LYNNE

RIDING THE WAVEFORMS

I'm writing in response to Thad Brown's thoroughly lacking article "World Wide Waveforms" (November 2004). I learned something about HTML code. However, the article meandered as a detailed account of how to make MP3s. That topic could have been summed up in a few simple paragraphs.

Though I did gather something useful regarding Web multicasting, where was the information on how to actually stream your music with programs such as RealPlayer and Windows Media Player? Are these options not recommended because they offer poor sound quality when compared with MP3 compression? Or are they fine alternatives, but for some unforeseen reason were simply ignored?

I'm sure I'm not the only one who could stand to learn more about streaming capabilities. In the future, please at least mention such obvious options within a given topic!

Daniel J. Coe
via e-mail

Author Thad Brown replies: Daniel—I'm sorry that the article didn't give you what you needed. My main point was to offer musicians—not record labels or companies—some ideas about how to get started putting their

own music on the Web. Because someone else hosts nearly all musicians' Web sites, much of what they can do with streaming media will be controlled by the hosting company. What's good about MP3s is that there is usually no need on either the client's or the server's end to install or modify software. Web-savvy musicians might think that anyone can correctly get RealPlayer files to work, but a lot of people out there can't figure out how to send email attachments.

Regarding Windows Media and RealPlayer files: Windows Media can offer excellent sound quality, but most Mac users (a significant audience in the music world) will have to install software to play them back, and many of them will object to doing that. Also, higher-end streaming situations will involve using a Windows Web server, a choice that many hosting companies don't offer. Real Networks has found a strong niche in streaming low-bandwidth things like news reports and sporting events. Thus, RealPlayer files gained a reputation for sounding poor, although they can sound fine at higher bit rates. As with WMP files, hosting RealPlayer files requires more complexity on the server side—something a hosting company might not accommodate.

With MP3 files, though, only a fraction of visitors to a Web site will need to do anything more than click a link, while only a fraction of Web sites will need any modifications beyond uploading a file and adding a link.

SPEAK OUT

As someone who has beta-tested many audio products over the years, I thoroughly agree with Larry the O's November column ("Final Mix: Shoring the Foundation").

I realize that there will never be a bullet on a product box or in ad copy that says, "Finally works the way you thought

it should." But so many small segments of the target market use me-too features that someone should step up and do the right thing. There are some glaring holes in just about every sequencer you care to name. I have asked for, lobbied for, and literally begged for certain features only to be told "no."

I urge all sequencer manufacturers to fix long-overlooked problem areas. And I urge all users to examine their software and send a note to the manufacturer saying what is not working for them and what they want the software to do or how they wish it to act. When consumers fail to express their dissatisfactions with a piece of software, the manufacturers assume that there is no need to fix legacy issues.

So, let's all get busy. You don't have to be a beta-tester to have a positive effect on your software of choice.

Dave Hallock
via e-mail

CHAIN GANG

I've been an EM subscriber since the early 1990s and have always found that reading your magazine is a good way of keeping up with changes in record production, as well as changes in the distribution chain—especially the "new model" of digital distribution as a replacement for record companies and their controls on distribution.

But you may want to reevaluate the supposed benefits of the "new business model." After 20 years of running a tiny label on the fringes of the industry, I've dealt with both the hardships of getting my product into storefronts, as well as getting it onto the download sites. And the verdict is, "Meet

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Why? Because the download sites have come up with some very clever ways of collecting lots of income without paying content providers for long periods, or never. The new tactic involves establishing threshold amounts before payments are made. Usually these threshold amounts are based on amounts that are statistically rarely reached. This ensures that the distributor will have large amounts of artist/label revenues in its coffers to work with for long periods of time. Furthermore, although the balances due to labels and artists earn no interest for them, they most assuredly earn interest for the distributor. And if the small label closes for lack of sales, then all that revenue becomes a nice bonus for the distributor.

For example, if I were a distributor, I could collect content from hundreds of labels, representing thousands of

artists and releases. By setting the threshold payment amount at \$500 (which statistically very few artists will ever reach) I guarantee myself that 100 percent of all these artists’ sales will provide me with income for a long period of time, without having to pay anything. During the time it takes for these artists to reach the threshold payment amount (if they ever do), I have hundreds of thousands of dollars to play with. How lovable is that?

Forget being a label or an artist. Electronic distribution is where the money is.

**Nearly Dead Massachusetts
Label
via e-mail**

GIVE ME SOME PROOF

I applaud EM for covering efforts to produce nuclear fusion with sound (“Tech Page: Sonofusion,” September 2004). As a science writer, I feel compelled to provide a more skeptical take on the sonofusion story.

Shortly after the Oak Ridge National Laboratory group obtained its first sonofusion results, the lab’s deputy director asked a second, independent pair of scientists at the laboratory to repeat the experiment. Even though they used much of the same apparatus, the new authors reported no evidence of sonofusion. This result was peer reviewed and published in a scientific journal (“Nuclear Fusion in Collapsing Bubbles—Is It There? An Attempt to Repeat the Observation of Nuclear Emissions from Sonoluminescence”; D. Shapira and M. Altmarsh, Physics Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee; *Physical Review Letters*, vol. 89, no. 10, #104302, 2002).

Scientists tell me that four other groups in the U.S. alone have attempted to replicate the results of the original experiment. Even though the details of that experiment are publicly available in scientific literature, no other group to date has published a peer-reviewed paper reporting evidence for sonofusion.

Last year, the original group at Oak Ridge published a second, more in-depth paper on sonofusion experi-

ments. However, critics say that the data is still not clear-cut enough to carry the extraordinary burden of proof required for claiming that sound can generate nuclear fusion in a liquid tank. While comprised of accomplished and knowledgeable individuals (whose identities were inadvertently switched in the photo caption), the Impulse Devices company profiled in “Tech Page” has yet to market any technology related to sonofusion.

The Princeton Plasma Physics Laboratory offers a Web page with links to articles containing the views of proponents and critics alike: http://fire.pppl.gov/acoustic_cavitation.htm. Both camps contain legitimate, well-regarded scientists in their ranks.

Sound is capable of doing truly wonderful things, and nuclear fusion may be one of them. But I urge everyone to keep both an open mind and a healthy amount of skepticism.

**Ben Stein
via e-mail**

Ben—I agree that keeping an open mind and a healthy amount of skepticism is critical in any new endeavor. In addition, you are correct that, taken together, sonofusion experiments to date have yielded ambiguous—though not wholly discrediting—results. Nevertheless, my mission with the “Tech Page” column is to profile interesting new technologies that involve audio but are not yet commercially available. My goal is to provide glimpses into possible future uses of audio technology; in this case, please note my liberal use of qualifiers such as “might,” “could,” “seem to support,” and “if they’re right.” My intention was to leave the skeptical door wide open while introducing readers to the concept of sonofusion.—Scott Wilkinson

WE WELCOME YOUR FEEDBACK.

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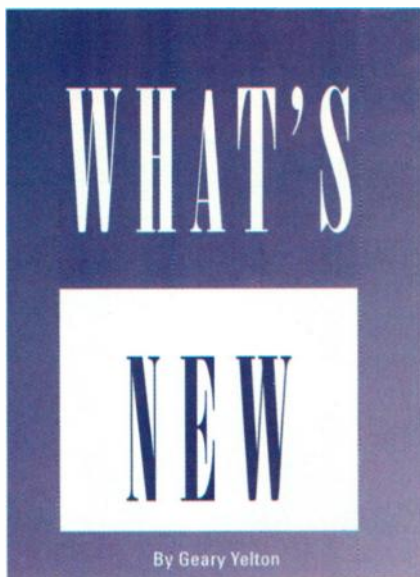
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▲ TERRATEC PHASE 24 FW

The newest portable interface from TerraTec is the Phase 24 FW (\$299). It is a FireWire model in a sleek aluminum case that sports two balanced ¼-inch analog inputs, two balanced ¼-inch analog outputs, and a ¼-inch stereo headphone jack that doubles as a stereo line output. A breakout cable connects to the case and provides coaxial digital audio and MIDI In and Out ports. In addition to stereo S/PDIF, the digital audio ports accommodate AC3 and DTS formats for video applications. The Phase 24 FW handles 24-bit A/D/A conversion at rates as high as 192 kHz and 24-bit S/PDIF at rates as high as 96 kHz. The analog outputs have an A-weighted signal-to-noise ratio of 111 dB.

The Phase 24 FW includes a small collection of cables and adapters, control panel software for Windows and the Mac, and Windows versions of Native Instruments Traktor DJ and Steinberg WaveLab Lite. It supports ASIO, WDM, MME, and DirectSound in Windows XP as well as CoreAudio and CoreMIDI in Mac OS X. TerraTec Electronic GmbH; Web www.terratec.com.

▶ APPLIED ACOUSTICS ULTRA ANALOG

The makers of the powerful modular soft synth Tassman 4 have introduced Ultra Analog VA-1 (Mac/Win, \$249), a 32-note polyphonic virtual analog synthesizer program. Ultra Analog synthesizes timbres by emulating traditional synth modules using two analog-style oscillators with sub-oscillators, a noise generator, and two multimode filters. Modulation sources include four loopable envelope generators, two syncable LFOs, and a dedicated vibrato module. For optimum flexibility, simultaneous reverb, chorus, and delay effects can be arranged in four different configurations.

Ultra Analog's large library of presets runs the gamut from ambient to vocal timbres. An integrated browser organizes sounds by category. The instrument's arpeggiator lets you select from four note orders and ten user-programmable patterns, and save them with their associated presets. Arpeggios, LFOs, and time-based effects parameters are controlled by the clock module, which can sync to tempo or respond to a tempo-tap function. You can

remap program changes, and you can access every control by means of MIDI Control Change messages. A built-in recorder module captures Ultra Analog's



real-time audio output as an AIFF or WAV file at sampling rates of up to 192 kHz.

Based on a 32-bit physical-modeling sound engine, Ultra Analog runs stand-alone and also supports VST and DXi formats in Windows and VST, Audio Units, and RTAS in Mac OS X. Applied Acoustics Systems/Ilio Entertainments (distributor); email info@applied-acoustics.com; Web www.applied-acoustics.com.

▼ ACCESS VIRUS TI

Access Music recently took the wraps off three synthesizers that break new ground and outperform previous Viruses in every respect. The rackmountable Virus TI Desktop (\$1,995), the 61-key Virus TI Keyboard (\$2,895), and the 37-key Virus TI Polar (\$2,695) each feature a dual-DSP-core system with a high-speed local bus. According to Access, the new architecture generates at least 80 simultaneous stereo voices.

The TI synths are the first Viruses with wavetable oscillators that you can mix with the classic Virus oscillators. Additionally, the new HyperSaw engine can generate up to nine parallel oscillators per voice, each with a suboscillator. All three instruments are 16-part multitimbral,

with 16 independent delays and reverbs. Multi mode now embeds all patch data for each part, allowing you to edit an individual part without overwriting its original preset. Each model stores 512 RAM programs and 2,048 ROM programs.



The Virus TI's USB port facilitates communication with the new Virus plug-in, which lets you use a Virus TI as though it were an Audio Units or VST instrument in any compatible host. What's more, templates are included that allow you to use the front panel to control other synths—both hardware and software. Whereas previous Viruses offered only analog audio I/O, the new models provide 44.1 and 48 kHz S/PDIF I/O and 24-bit, 192 kHz D/A converters. Access Music GmbH/GSF Agency (distributor); email info_us@access-music.de; Web www.virus-ti.com.

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SOUND ADVICE ▲▲▲



▲ SESSIONLOOPS DRUM FOUNDATIONS

Fledgling soundware developer SessionLoops has released *Drum Foundations, Vol. 1: Classic Rock Sessions*, available in Apple Loops (\$49.95), stereo Acidized WAV (\$49.95), and multitrack Acidized WAV (\$69.95) formats. Drummer extraordinaire Simon Phillips, rather than playing in his own style, emulates other great rock drummers and re-creates drum tracks from classic rock songs. The collection features 34 sessions inspired by songs ranging from SlowFloyd ("Comfortably Numb") and PoliceGroove ("Don't Stand So Close to Me") to LedGroove 2 ("Immigrant Song") and BayouBoogie ("Ramblin' Man"), at tempos ranging from 63.5 bpm to 182 bpm.

Each session breaks song sections down into segments such as IntroFill, Verse, BSection 1, BreakFill, Chorus2a, and so on. Segments on the multitrack version provide individual drum and cymbal tracks with natural bleed left intact, as well as a stereo recording of the room sound. For creating additional parts using a sampler, all sets also include individual hits. The stereo Classic Rock Sessions are each on a single CD-ROM and the multitrack version is on two CD-ROMs. SessionLoops; email info@sessionloops.com; Web www.sessionloops.com.

WIZOO DARBUKA AND LATIGO

Veteran virtual-instrument developer Wizoo has released two recorded-percussion plug-ins with some unique user-interface features. Darbuka (Mac/Win, \$299.95) plays Middle Eastern grooves, and Latigo (Mac/Win, \$299.95) plays Latin American grooves. Both use Wizoo's proprietary Flex-Groove engine to provide real-time control over timbre, arrangement, and assorted performance parameters. Darbuka and Latigo support Audio Units, RTAS, and VST in Mac OS X and VST in Windows XP.

Darbuka supplies a 2 GB library of recorded grooves performed by master Arabic percussionists Suat Borazan and Mohamed Zaki. Encompassing musical styles from Algeria, Egypt, Lebanon, Turkey, and other North African and East Mediterranean cultures, the collection features instruments such as douhola, bendir, riqq, and sagat.

Latigo contains a gigabyte of multitrack patterns played by Latin percussionists Edwin Bonilla and Olbin Burgos. Styles ranging from abacua and bossa nova to songo and son montuno embody Caribbean, Central American, and South American music. Instruments include congas, timbales, ganza, and a complete drum kit. Wizoo/M-Audio (distributor); email info@m-audio.com; Web www.wizoo.com.

▲ ZERO-G PRO PACK

If you appreciate bang for the buck, Zero-G's new *Pro Pack for GarageBand* (\$169.95) might be just the sample collection you need. Zero-G has selected 11,000 tracks from 43 sound libraries in its back catalog, reformatted them as Apple Loops, and burned them onto two

DVD-ROMs comprising over 9 GB. Pro Pack delivers more than 3,900 drum and percussion loops, 2,300 instrument loops, 1,200 vocal loops, and 3,000 effects and atmospheric textures. Culled from

sample discs such as *Brass Elements*, *CuckooLand Unhinged*, *House Party*, *Pure Mayhem*, *Spices of India*, *Trance Formation*, and *Voices of Africa*, Pro Pack is jam-packed with loops and grooves in a tremendous variety of musical styles. EastWest; email info@eastwestsounds.com; Web www.soundonline.com.



▼ PROPELLERHEAD REASON DRUM KITS

If you're among the thousands of Reason users, you'll definitely want to check out Reason Drum Kits (\$129) for Propellerhead Software's virtual music workstation. Featuring 16- and 24-bit versions of the same ReFill, Reason Drum Kits supplies more than 10,000 samples for NN-XT, organized into 17 preset kits covering an assortment of musical genres. It also includes 50 ReDrum kits, 120 MIDI Files organized by category, 6 demo songs, and much more.

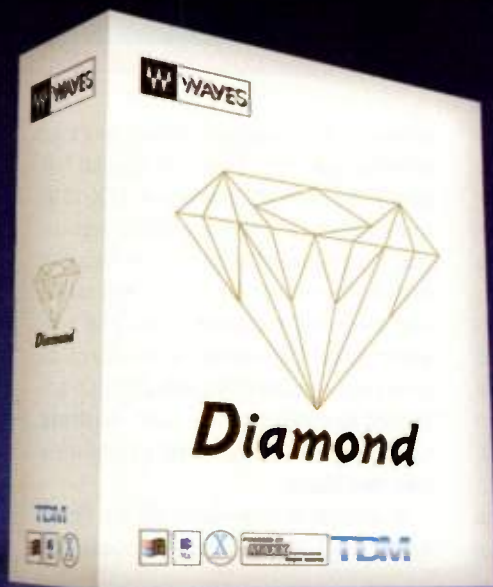
This 2.5 GB collection is the result of a technique the company calls *hyper-sampling*, which entails sampling at

different Velocity levels, creating multiple samples at the same Velocity levels, recording variations on each sample using different playing techniques, and using numerous mics at various distances. For optimum flexibility, each mic has its own mixer channel in

Reason. Propellerhead Software; email info@propellerheads.se; Web www.propellerheads.se.



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▶ LUXONIX LFX-1310 1.0.2 (WIN)

LFX-1310 is a free multi-effects VST plug-in for Windows from Luxonix (www.luxonix.com). It breaks out the effects section from Luxonix's two shareware rompler plug-ins, Ravity(S) (Win, \$139) and Ravity(R) (\$79), which are devoted to synth and percussion sounds, respectively.

LFX-1310 has three effects slots connected in series. Twenty-four effects modules are arranged by category in a pop-up menu, and you can load any module into any slot. A context menu for each slot offers extensive MIDI-control-assignment options as well as allowing you to copy and paste settings between slots. Each slot has three controls whose functions change depending on which plug-in is occupying the slot.

Effects include three filters, peak and RMS compressors, five distortion effects, a



stereo imager, modulation effects, and four reverb algorithms. Slots can also be left empty to save CPU resources. LFX-1310 comes with 128 factory presets that include a variety of phasing and flanging setups, reverbs of all shapes and sizes, overdrive and distortion, hard and soft compression, several EQs, and a selection of rhythm-synced delay setups. Also arranged by category, the presets illustrate LX-1310's ample processing capabilities (see **Web Clip 1**).

In addition to three-band EQ, the filters have 12 and 24 dB S'Filters—lowpass and

highpass filters in parallel with crossover, Q, and mix controls. Distortion effects deliver overdrive, digital, and amp distortion as well as a downsampling-bitcrushing and a vinyl-noise generator. Modulation includes chorus, phasing, flanging, tremolo, auto-wah, and auto-pan. The delays are synced to host tempo. Reverb simulations include gated, room, hall, and spring.

As its presets show, LFX-1310 offers a slew of effects that are easy to tweak and don't sap your CPU resources.



—Len Sasso

KEY CHANGES

Ugrading its entire line of plug-ins to version 5, **Waves** (www.waves.com) is now offering more powerful capabilities and expanded platform support while conserving CPU resources. Waves has also introduced L3, a peak limiter that divides audio into five user-definable bands and intelligently attenuates each band to maximize headroom. In response to users who want to learn more about audio and using Waves plug-ins, the company has launched a new Education and Professional Content division. It will concentrate on producing instructional books, educational DVDs, and interactive book and CD packages, such as the recent second edition of *Production-Mixing-Mastering with Waves*, by Anthony Egizii. It will also produce educational seminars and Web sites... **Roxio** (www.roxio.com) is shipping Toast with Jam 6 (Mac, \$199.95; upgrades from \$99.95), a CD- and DVD-creation suite for Mac OS X users. It combines Toast Titanium 6 disc-burning

software, Jam 6 audio-track mastering software, Peak Express 4 audio-editing software, a Dolby Digital encoder, and various utility programs. It supports audio resolutions up to 64 bits at sampling rates of up to 192 kHz... **Moog Music** has updated the Voyager's operating system to version 2.5; get a free download from www.moogmusic.com. Also available is the Soundtower Minimoog Voyager Editor/Librarian (Win, \$79), which lets you organize and edit presets, precisely manipulate parameters, and analyze existing presets... For \$25, you can upgrade **LinPlug RM IV** (Mac/Win, \$149) to version 4.1, which features 100 new sample-based drum kits and 2,850 MIDI patterns. Order the update from www.linplug.com... **Yellow Tools**, makers of *Pure Series New Edition* sample libraries, as well as the Modular Virtual Instrument (MVI) software series that includes *Culture* and *Majestic*, has launched a redesigned Web site (www.yellowtools.com) with an online shop and a new user area. In addition, the company has taken over international distribution of its own products...

Korg has downloadable demo versions of its Legacy Collection soft-synth suite for Windows XP and Mac OS X at www.korg.com/legacy... **Edirol** (www.edirol.com) has updated the Mac OS X drivers for ten of its products to version 2.0.1... **Sony** has revamped its Acid Web site (www.acidplanet.com) to coincide with the release of Acid 5.0. The new site offers free loops, an increased focus on video, and the ProZone area, which is accessible for an annual subscription of \$49.95... The New England Association of Schools & Colleges (NEASC) has accredited **Berklee College of Music's** online extension school (www.berkleeonline.com), making it the first institution to offer accredited online certificate programs in songwriting, arranging, production, and music business. Berklee also announced winners of its online music scholarship program, which awarded five grants that pay for six online music courses, up to two years of study, and all the Berklee Press books for those courses. Winners will be able to transfer credit to other colleges or universities.

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▼ NATIVE INSTRUMENTS ABSYNTH 3

Computer musicians and sound designers will rejoice at the news that Native Instruments has updated its unique virtual synthesizer to Absynth 3 (Mac/Win, \$339; updates, \$119). The new version's comprehensive multichannel implementation is optimized for surround production in formats ranging from 3.1 to 8.0, presenting new possibilities for sound placement and movement in three-dimensional space. You can even adapt



sounds from previous versions to take advantage of Absynth's new resources for location modulation.

To supplement existing techniques such as FM and granular synthesis, the oscillator section now offers a real-time Fractalize mode and frequency-shifting modulation. To fatten up your sounds, a new Unison function lets you combine as many as eight detuned oscillators. Free-Run Oscillator mode can create subtle changes in polyphonic timbres. Absynth 3 can process three external stereo signals simultaneously, routing each to a separate oscillator channel for processing with Absynth's filters, envelopes, and effects.

Absynth 3's revised user interface presents a single window that reduces screen clutter and simplifies workflow. Working with multiple-breakpoint envelopes is easier than ever, thanks to a new envelope editor with features such as copy/paste functionality and an envelope cursor that shows its current position in real time. A library of more than 1,000

presets includes 256 new sounds that make the most of Absynth's new features, as well as over 800 presets from the previous version. Native Instruments; email info@nativeinstruments.com; Web www.nativeinstruments.com.

SPECTRASONICS STYLUS RMX

Are you itching to get your groove on? Spectrasonics has completely rewritten its popular percussion-groove virtual instrument to create Stylus RMX (Mac/Win, \$299). The new plug-in incorporates the Spectrasonics Advanced Groove Engine (S.A.G.E.), an innovative foundation offering vastly improved real-time control and flexibility. Stylus RMX has a redesigned user interface, a core sample library with well over twice the content of the original, and lots of new tools to manipulate sounds on the fly. Its 7.4 GB library of sounds and patterns includes all the sounds of the original Stylus and adds plenty of new material.

Stylus RMX offers a much wider range of musical styles than its predecessor. Grooves are now broken down into individual tracks and single hits, and two-dozen built-in effects are at your command. Stylus RMX is expandable; if thousands of grooves and hundreds of kits aren't enough, it can import content from five new S.A.G.E. Xpanders (\$99 each) as well as from Groove Control sample libraries and from REX files. Create your own drum kits and groove libraries and share them with other users. Stylus RMX can even improvise new patterns using a new feature called Chaos Designer—one of five main screens that also include a mixer, a browser, and an effects rack.

Stylus RMX is 8-part multitimbral and supports Audio Units, VST, and RTAS on the Mac and VST in Windows. It comes on two DVD-ROMs and has a tutorial CD-ROM. Upgrades are free if you bought Stylus in 2004, and \$99 if you registered your copy before that. Spectrasonics; email info@spectrasonics.net; Web www.spectrasonics.net.

▼ METRIC HALO CHANNELSTRIP 2.0

Until recently, making the transition to Mac OS X meant that recordists depending on Metric Halo's ChannelStrip had to sacrifice using that comprehensive dynamics processing plug-in. ChannelStrip Native 2.0 (Mac, \$345) and ChannelStrip TDM 2.0 (\$699) now offer full support for OS X. ChannelStrip re-creates the experience of working with a world-class mixing console by furnishing input gain and trim, expansion and gating, compression with an integrated sidechain filter, 6-band parametric equalization with six filter types, and high-resolution metering on every processing block. It includes more than 100 practical presets to handle almost any mixing situation.



ChannelStrip Native runs on VST, MAS, RTAS, AudioSuite, and Audio Units hosts. The TDM version, of course, requires Digidesign Pro Tools and compatible hardware. Downloadable upgrades from previous versions range from \$149 to \$354. Metric Halo; email in-foo@mhlabs.com; Web www.mhlabs.com. ☉

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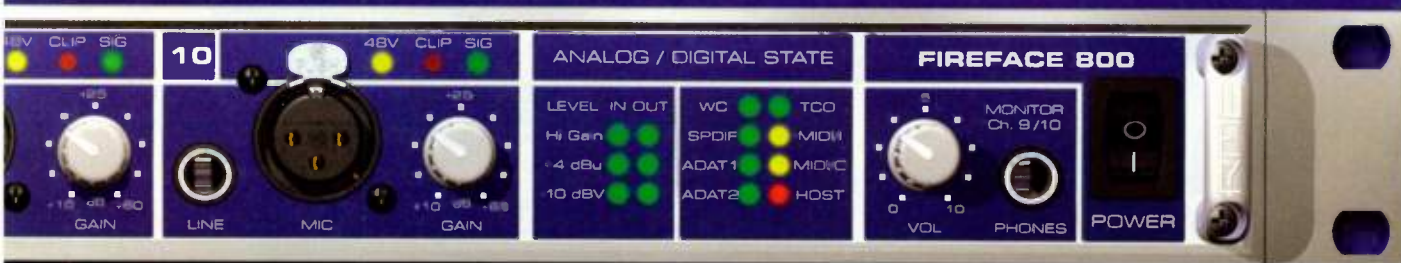
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The Power Within



MIKE CRUZ

**Unlock
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potential of
your sequencer's
mixer.**

If you produce your music on a computer-based digital audio sequencer, the odds are good that you use its mixing features to some extent—probably for plug-in effects and selected automation. But have you ever considered going the whole nine yards and doing all of your tracking and mixing from your sequencer's mixing screen instead of from your hardware console?

It's an approach worth considering, because your sequencer's mixer gives you features—such as total recall and automation of volume, panning, effects, and mutes—that are beyond the capabilities of most analog boards (see Fig. 1). And by mixing entirely “in the box,” you can bounce your final mix to a stereo file without ever leaving the digital domain.

But switching to a sequencer-based mixer can be a big adjustment for some,

and it is not without its drawbacks. In this article, I'll examine the pertinent issues you'll face when making the transition to computer mixing.

PROSE ABOUT THE PROS

The advantages of software mixing are particularly evident when it comes to the mix phase of a project. A sequencer's automation features let you build your mixes over time without losing your settings and having to mark fader positions on pieces of tape on the channel strips.

A software mixer lets you precisely adjust levels, panning, and effects, allowing you to easily pull off complex mix moves that you'd never even dream of doing on a hardware mixer. That's particularly good news for people who work alone in personal studios and don't have anyone to help them push up a fader or turn a send knob at a precise moment in a song.

By Mike Levine

Sweetwater: Imitated, But Never Equaled

Twenty-five years ago, Sweetwater was founded by a musician and recording studio owner who needed the same things you need today: quality gear at great prices, expert advice before the sale, and first-class tech support and service after the sale. He assembled a staff of audio professionals who could provide top-notch service to recording musicians like you. Over the years, continued growth, dozens of industry awards and (above all) customer loyalty have shown that "The Sweetwater Difference" has made a difference in the way musicians and engineers buy gear.

A quarter century later, other audio retailers have figured out that presenting themselves as "professionals" is a good idea. And if imitation is the sincerest form of flattery, well, we're flattered. But Sweetwater Sales Engineers, tech support staff and service experts remain the yardstick by which all other dealers are measured. So no matter what you need for your music — from guitars and keyboards to preamps and plug-ins — count on Sweetwater to be your first and best source of information, great prices and total support.

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The Power Within

Most sequencers give you the flexibility of automating onscreen faders and knobs; drawing volume, pan, and controller curves directly into the tracks; or using a combination of the two methods. Time is the only limitation regarding how much editing you can do with your mix data.

A sequencer's ability to recall a mix down to the last EQ setting and pan assignment, compressor preset, and so forth gives you amazing flexibility. It makes revisions and alternate versions an easy option. It means that if you're burnt out on a particular mix before you've finished it (and who hasn't had that happen?), you can switch to a different project and then come back to that first mix later—something you'd probably never do if you had to manually recall your mixes.

If you mix in the box, you'll never have to go through the tedious process of writing down or drawing the settings of your hardware knobs on a piece of paper.

If you're mixing a CD project, the ability to switch between songs is a real benefit, especially if you rent your stu-



FIG. 2: The Tascam US-2400's features include 25 touch-sensitive motorized faders and 24 rotary encoders, giving you tactile control of your sequencer's mixer.

dio and engineering services to clients or work on projects that contain lots of different pieces of music, such as a film or industrial scores.

THREE BLIND MICE

Obviously, I'm an advocate of the in-the-box approach. I think its advantages greatly outweigh any negatives. Of course, not everybody agrees. The most frequently voiced complaint is that moving a mouse just isn't the same as adjusting the controls on a hardware mixer. I've found it easy to get used to mouse mixing, but if you can't live without physical faders and knobs, you have the option of purchasing a control surface, which can give you tactile control of volume, pan, effects parameters, and a lot more.

A good example of that is the Mackie Control Universal (\$1,299). It connects to your computer through your MIDI interface and offers 9 motorized faders, a slew of function knobs, and templates for more than 12 different digital-audio sequencers.

For \$1,999, you can get the Tascam US-2400 (see Fig. 2). It connects through USB, offers 25 motorized faders and 24 rotary encoders, and supports major DAW software. Other manufacturers of control surfaces include Digidesign, CM Labs, Edirol, and Radikal Technologies

THE VINTAGE DISADVANTAGE

If you have vintage or other outboard gear that you want to keep using, it's going to complicate matters. You can

integrate outboard processors into your DAW's mixer if your audio interface has enough I/O. Unless the outboard gear is digitally controlled and responds to MIDI (which won't be the case with a lot of older processors), however, you won't be able to fully automate it nor completely recall it.

It is perfectly valid to continue using your outboard processors while still mixing from your DAW's mixer screen. With that hybrid setup, you'll be able to recall some of your mix parameters but not others. For those you can't recall, you'll have to write down their settings. (A producer I've worked for who owns a bunch of vintage outboard gear uses a digital camera to photograph the settings of his processors, which he then downloads into his computer and saves along with the sequencer file.)

If your outboard processors are digitally controlled, you can use program changes embedded in your sequence to switch them to the correct patches. You still might have to write down front-panel knob settings, however, depending on the particular piece of gear.

If you have outboard synths and samplers that you can't part with, you can control their parameters with MIDI Program Changes and MIDI Control Change commands, which allow you to recall your settings in most cases. You'd need enough analog inputs (unless your synths have digital outputs) to bring your synth outputs into the computer for the mix. You'll probably have to record your outboard instruments and outboard effects returns to disk before you render your final mix (see the subhead "In the Bounce").

CPU FAQ

A major issue you'll have to confront is CPU resources. To run all of the plug-ins



FIG. 1: A digital audio sequencer's mixer, such this one from Apple's Pro Logic 7, offers you powerful features including automation of volume, pan, mutes and effects parameters; recall; and the flexibility of plug-in effects processing.



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The Power Within

that you'll need, a powerful computer is a necessity.

If your CPU is outdated, it might not have enough horsepower to allow you to comfortably mix in the box. If you can have only a few plug-ins open before your sequence starts to bog down, you might have to postpone the switch to software mixing until you upgrade to a faster computer. But if you already have one—such as an Apple G5, a fast dual G4, a Pentium 4, or a fast AMD-based model—you should be able to have quite a few tracks running simultaneously, a bunch of plug-ins open, and even some virtual instruments enabled without your CPU going into slow motion.

Having a lot of processing power is important if you're going to do a completely in-the-box mix, because it will



FIG. 3: The Mackie Big Knob offers monitor switching, headphone monitoring, talkback, and input switching.

be necessary to apply all of your EQ, dynamics processing and effects from your computer (unless you have a DSP-card-based system like a Pro Tools TDM setup, a TC Electronic PowerCore, or a Universal Audio UAD-1 system).

You can maximize the CPU power that you do have by bouncing tracks to disk with effects, thus freeing up computing power for other tasks (or you could “freeze” the tracks if your sequencer offers such a feature). Of

course, the freedom and flexibility that you get from your sequencer's mixing features will be lessened somewhat if you have to make a lot of effects decisions at the beginning of the mix process.

To save additional CPU, consider converting your soft-synth MIDI tracks into audio tracks before finishing the mix.

IN THE BOUNCE

At the end of your mix, when you've finished adjusting levels, pans, effects, and so forth and are ready to record your mix to stereo, you won't need to send it to an external 2-track. Instead, you'll render your mix using your sequencer's “bounce-to-disk” function.

Virtually all digital audio sequencers have a function similar to this, although it might go by a different name (for example, in Cakewalk's Sonar it's called “Bounce to Track”). Bouncing is often faster than real time. You can easily print multiple mix versions with very little trouble, and your mix will stay in the digital domain.

PERIPHERALLY SPEAKING

Even if you've decided to sell your hardware console and go the soft-mixer route, you're still going to need outboard hardware. Depending on the capabilities of your audio interface, you may need additional mic preamps. If you record others besides yourself in your studio, you'll probably need the capability for talkback and a way to setup and output cue mixes. Additionally, you'll want a facility

A COMPROMISE SOLUTION

If you want the features of a software-based mixer but you can't give up on the hardware-mixer paradigm, a digital mixer might be your answer. Although it won't be as seamlessly integrated into your system as a sequencer's mixer, it can give you many of the same advantages when it comes to automation and recall, and you'll have real faders and knobs to twiddle (although with many digital mixers, it can take several button pushes to make a knob active for a given task).

The Yamaha 01X (see Fig. A) is a recent example of a digital mixer (see review in the November 2004 issue of EM). Priced in the same range as many dedicated control surfaces, the 01X, which uses Yamaha's mLAN technology to transfer audio and data over FireWire, gives you control-surface functionality (including templates for many top sequencers), built-in DSP (including dynamics on every channel), the ability to transfer your mixes from your DAW, 8 XLR/line inputs, and monitoring features.

Other manufacturers that offer digital mixers for the personal-studio market include Behringer, Digidesign, Event, Spirit, Tascam, and Roland.



FIG. A: The Yamaha 01X gives you the automation and recall of a sequencer's mixer, with the physical control of a hardware console.

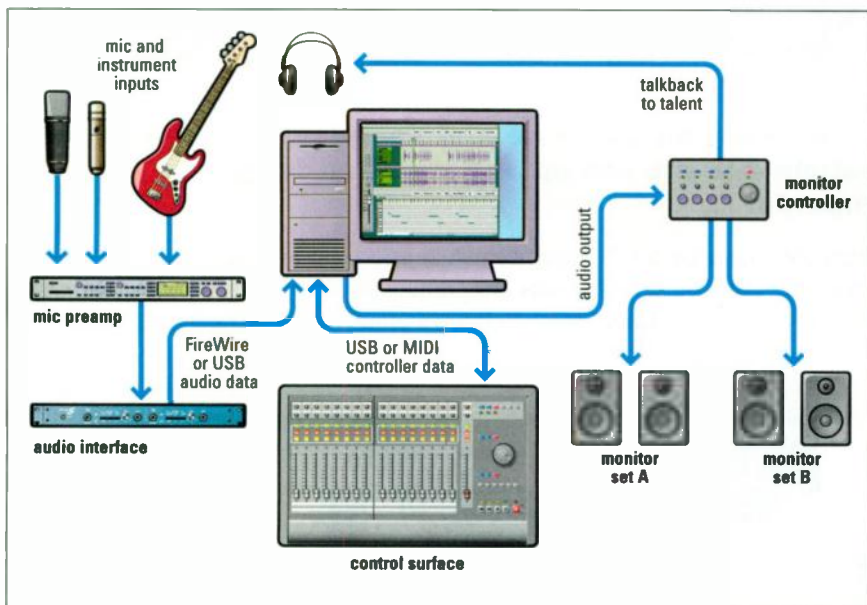


FIG. 4: The figure above shows the signal flow and components in a typical mixerless studio.

for switching between different sets of monitors.

One obvious solution is to keep your hardware mixer and utilize it for these tasks. That way you don't have to shell out good money for peripheral devices (I'm assuming that you

▼

**A sequencer's
ability to totally recall
a mix gives you
amazing flexibility.**

already have a multichannel audio interface), and your existing mixer won't go to waste.

If you don't want to use your old mixer, however, you'll need a couple of additional peripherals. If your audio interface doesn't have enough mic pre-amps built in, you could consider an outboard multiple mic pre that's designed to work with DAW systems. The market has seen a flood of such devices in the past couple of years, and there are plenty to choose from in all price ranges.

You'll also need a replacement

for your mixer's monitoring section. Products such as Mackie's Big Knob (see Fig. 3), PreSonus's Central Station, and Samson's C-control address that need. They each give you the ability to connect and switch between several sets of monitors. Additionally, they offer talkback facilities (including a built-in mic). Central Station has analog and digital I/O (the Mackie and Samson models are analog only), but it is considerably more expensive.

With an outboard multiple mic pre and monitor controller and your audio interface, you'll have a flexible and easy-to-use front end for your DAW (see Fig. 4).

THE DREAM MIXER

The best way to see if you're ready for computer-based mixing is to give it a try. Set your software to output only a single stereo pair—for monitoring purposes—and have at it. Use only plug-in effects and bounce your final product to disk. It may be an adjustment, but I'm betting that you'll experience a huge productivity increase by tapping into the enormous power of your sequencer's mixer.

Mike Levine is a senior editor at EM.

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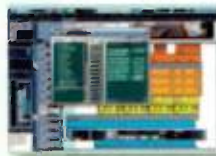
Why Carillon Recommends E-MU

Sound Quality
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E-MU's 'm' series cards feature the very same 24bit/192kHz converters as Digidesign's multi-thousand dollar Pro Tools HD systems, providing pristine audio & an incredible 120dB dynamic range.

E-MU FX 
Zero CPU VST FX



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1212m Built around the very same 24bit/192kHz converters as Digidesign's multi-thousand pound ProTools HD system, the 1212m has balanced stereo analogue I/O on 1/4" jacks, MIDI I/O, S/PDIF I/O and ADAT I/O.



1820 Two TFFro high grade mic-pre's with phantom power, 8 balanced ins and 8 balanced outs with 24bit/192kHz converters, ADAT I/O, S/PDIF I/O, turntable input, Firewire and dual MIDI I/O.



1820m All the features of the 1820 but with high-end 24bit/192kHz AD converters as found in ProTools HD. An additional daughterboard also provides sync facilities in the form of WordClock, SMPTE and MTC.

DELIVERED



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SUPPORT No long hold times, we'll call you back first, just the best support in the business bar none (check us out on the forums), plus free access to our dedicated support website.

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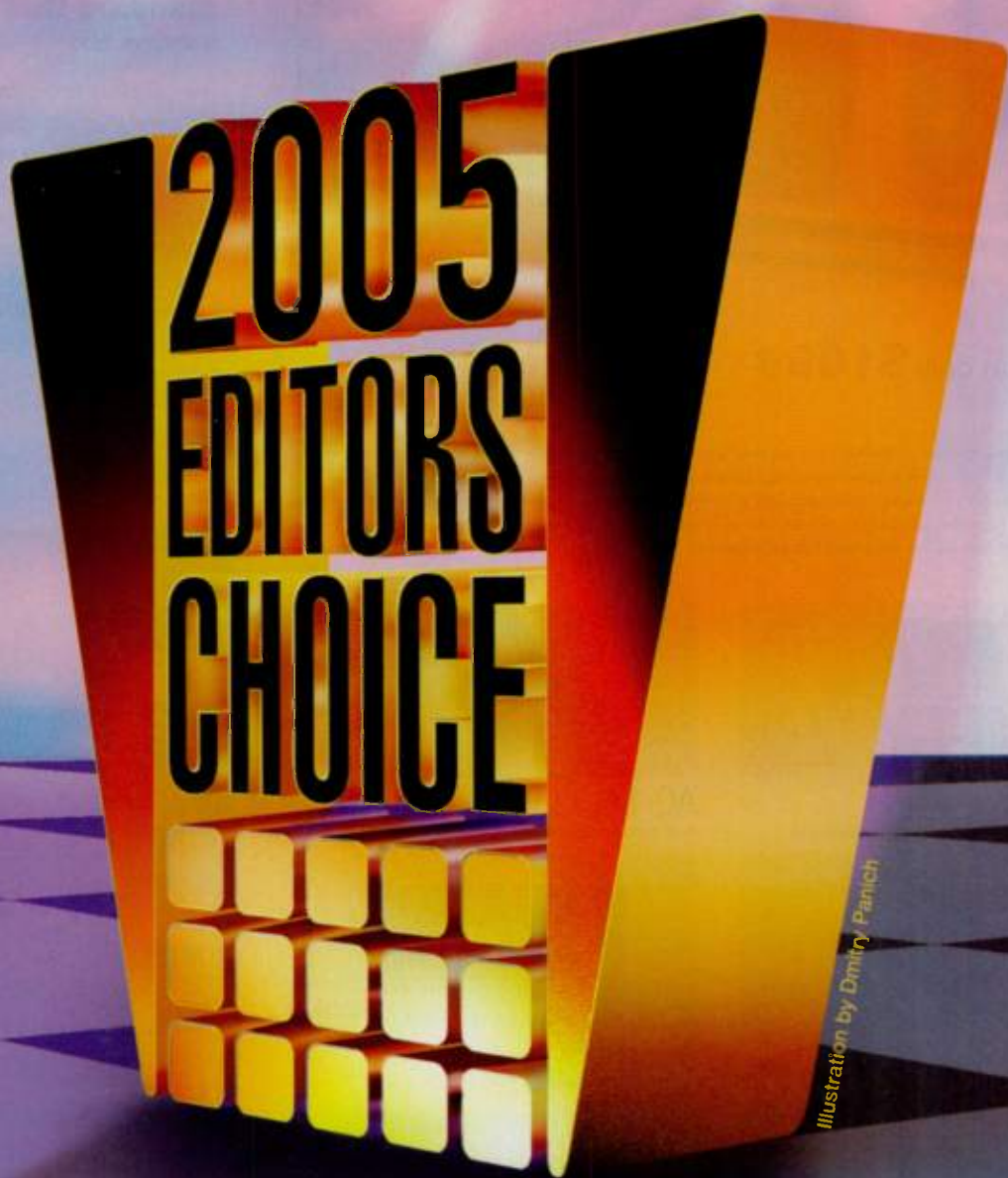


Illustration by Dmitry Panich

Musician

Let's have
a standing
ovation for
our favorite
new products
of the
past year!

By the EM Staff

You might think that the EM editors would be jaded after all these years of evaluating products. But we're not because we don't just check out a bunch of capable "me-too" products; we also test an impressive number of extraordinary, innovative, and occasionally mind-blowing devices and programs. Reviewing the better products is a pleasure; choosing the best of the best for our annual Editors' Choice Awards is exhilarating and inspiring.

Clearly, our industry is lucky to have many innovative product designers and product managers who deliver outstanding studio tools for electronic musicians. The Editors' Choice Awards is our way of rewarding those who create our favorite tools by recognizing the finest products and upgrades that we've tested in the past 12 months.

Each year, the number and types of award categories change slightly to reflect the products that we felt were most worthy. For instance, last year we had two microphone categories, divided by price; this year, we gave one award for mics. Last year we gave an award for the best groove box; this year we didn't. When soft instruments arrived on the scene, we had only one category for them; last year and this year we had four such categories—but not the same four.

This year, we gave 25 awards in 23 categories. We had ties in two categories: digital audio sequencers and effects-processing software. As you'll understand when you read the story, the two winners in each of these categories are quite different in approach and are equally deserving of the award.

All award-winning products have been field-tested by EM's editors and a select group of top authors. We also solicited opinions from the editors of sister publications *Mix* and *Remix*. The final selections were made by EM technical editors Steve O, Rusty Cutchin, Mike Levine, Dennis Miller, Gino Robair, Len Sasso, and Geary Yelton. All award-winning products have already been covered in EM reviews or feature roundups or the review is in progress and our tests are far enough along that we feel confident about our conclusions (see sidebar "The Award Winners in Review" on p. 60).

To be eligible for an EM Editors' Choice award, products must have shipped between October 1, 2003, and October 1, 2004, when we began editing our January issue. We allow some slack for products that shipped so close to the October 2003 deadline that it was not possible for us to test them in time for last year's awards. (This was the case with three of this year's winners.) We do not allow such slack if we believe a manufacturer could have supplied a review unit in time but intentionally delayed sending it. We give an award to a software upgrade only if we think it offers major and significant improvements over the previous version.

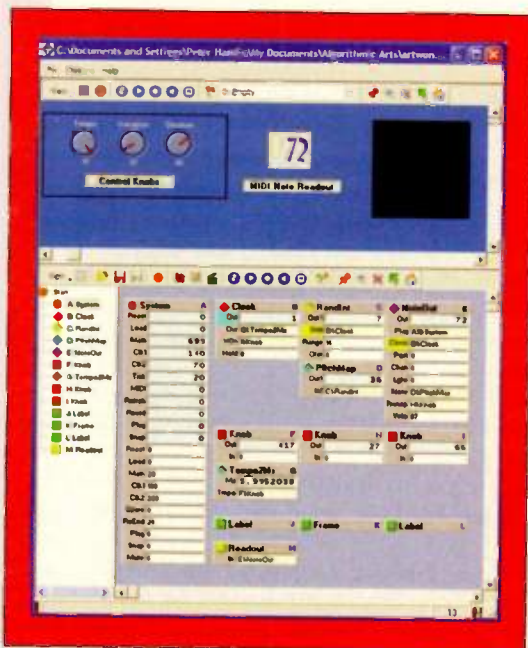
And now, please join us in recognizing the winners of the 13th annual EM Editors' Choice Awards!

Algorithmic-Composition Software

ALGORITHMIC ARTS

ArtWerk (Win, \$199)

Algorithmic composition may not be everyone's cup of tea, but if you have any interest in the field, you should check out Algorithmic Arts' ArtWerk. ArtWerk is a second-generation program (following the company's SoftStep), and



it takes computer-assisted composition to new heights. Not only does the software allow you to design processes that will generate MIDI notes in abundance, but it also provides an extensive toolkit for generating video. User-defined macros and functions, support for microtunings, and the ability to read and process Standard MIDI Files are just a few of the features that make ArtWerk a tinkerer's paradise.

Applications run from the traditional to the extreme. Maybe you need an ambient background for a movie cue or a few drum riffs to kick-start your creativity. Or perhaps you want to try out dozens of different permutations of a melodic line that doesn't quite work where you need it. On the radical side, suppose you want a random stream of 250 MIDI notes between C2 and C5, all in the space of two measures; or maybe you want to build a device that uses the population density of the U.S. to determine the number of notes that will occur at any given point in a piece. These are just some of the many tricks that ArtWerk can perform. And you can build your contraptions using any of the numerous interface-control modules: sliders, faders, knobs, and the like.

If you have an interest in graphics, ArtWerk can provide a lot of material. Think of it as your

artistic collaborator: it will paint 2-D pictures based on characteristics of your music or derive data from a bitmap that can be used to control a sound parameter of your choice. ArtWerk's interface is clean and uncluttered, as it avoids the virtual patch cords that other modular programs rely on.

With more than 200 modules, there's not much in the way of real-time composition that you can't do with this program. If you're a Windows user, check out the demo at the manufacturer's Web site and see what tricks it can do for you.

Audio-Editing Software (2-track)

I3 SOFTWARE

DSP-Quattro 1.5 (Mac, \$129)

True bargains are a rarity in professional-grade music software. When one does come along, it is a compelling candidate for an award. Based on features and price, DSP-Quattro would appear to be a good deal, but it wouldn't be an award-winner if its performance were unimpressive. Fortunately, the program delivers outstanding quality as well. In our estimation, that makes it a true bargain—and an EM Editors' Choice award winner.

DSP-Quattro allows you to open multiple audio files in all the usual formats, offers a typical array of built-in effects plug-ins and destructive DSP, and hosts VST and Audio Units virtual-instrument and effects plug-ins. It allows you to construct complex signal chains including all of the elements just mentioned, and you can record the output. For example, virtual-instrument hosting allows you to bring in a prerecorded backing track and quickly overdub your favorite synth. The software will simultaneously play multiple audio files; however, they can not be synchronized in time, which keeps DSP-Quattro from qualifying as a multitrack editor.

The sample editor is equally full featured, supporting markers, regions, and loops and sporting a



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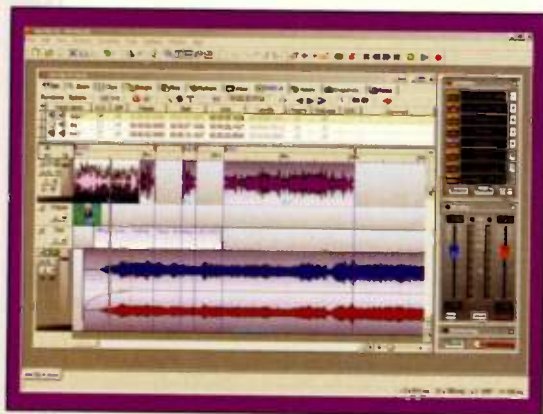
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*Total free sample libraries included with GigaStudio 3 Orchestra version. Ensemble version comes with eleven gigabytes of free samples; Solo version comes with eight gigabytes. Hundreds of gourmet Giga sample libraries are available separately. ©2004 TASCAM All Rights Reserved. All specifications are subject to change without notice. GigaStudio is a trademark of TASCAM/TEAC.



high-resolution loop editor. A dual-purpose scrub tool can either control playback speed or act as a bidirectional scrubber. Each open audio file has its own effects rack that can be used nondestructively or burned into the same or a new audio file.

DSP-Quattro saves all settings in Projects, and each Project supports a playlist that can be played in real time or used to burn audio CDs complete with all effects processing. In short, this little monster is one of the best deals of the year.



Audio-Editing Software (multitrack)

STEINBERG

WaveLab 5 (Win, \$699.99)

Steinberg's WaveLab has consistently maintained its place as a serious competitor in the world of Windows multitrack audio software, but version 5 really brings the program to the head of the pack. Among its many new tricks is support for professional-quality DVD-A burning and authoring, something you won't find in any other Windows multitrack editor on the market.

A number of new multichannel metering options, coupled with what remains our favorite 3-D spectral view, give you many ways to see what's happening in your audio. A new video track makes composing audio for video easier than ever. Track-based effects, which complement Master Section and clip-based effects, are now on hand, as are individual volume faders for every track. Surround support has been greatly enhanced: you can pick from a variety of preset surround configurations or make your own routings of individual tracks to as many as eight physical outputs. There's also a new surround-pan feature; although it still needs a little refining, it allows you to create envelopes that control the flow of your audio in space.

WaveLab 5 adds sev-

eral new file types (WMA Pro 5.1 and 7.1 and AVI audio, for example) to its ever-growing list of supported formats, making it even better-suited for Web and multimedia use. Its ease of use is legendary, and its help system includes online and context-sensitive support as well as a well-written, thorough, printed manual.

Although it's still missing a global mixer and any form of MIDI support, WaveLab 5 is an excellent tool for nearly any type of audio production. And with all of the new categories of media it can manage (did we mention it has the most powerful database features we've ever seen in an audio application?), you'll be set for the coming years, no matter where your music is headed.

Channel Strip

PRESONUS
Eureka (\$699)

PreSonus's Eureka faced a tough fight with Focusrite's Twin-Track Pro in the channel-strip (integrated preamp and processor) category. Both units possessed excellent sound quality and abundant features. Ultimately, we chose the Eureka because of its fully parametric EQ section and overall value. This unit packs a lot of punch for its price.

The Eureka features a mic preamp, compressor, and 3-band parametric equalizer. The compressor section offers a comprehensive set of controls, including a filter control for frequency-dependent compression applications such as de-essing. You can tailor the compression further with the Soft switch, which toggles between soft- and hard-knee compression curves. A Saturate control emulates the effect that tape saturation and tube warmth have on the even-order harmonics of a sound.

Each of the three parametric EQ bands offers Q, Gain, and Freq controls. For each band, the Q ranges from three octaves to two-thirds of an octave. The Gain knob allows up to 10 dB of boost or cut for each band. The EQ circuit has its own bypass switch and a switch that places it before the compressor in the audio signal path.

We were surprised at how well the Eureka holds its own against more expensive preamps. The unit sounds full in the low end and smooth in the highs. Choosing the correct input-impedance setting for each source (often the 2.5 k Ω setting) helped the Eureka shine on several recording tasks.

The Eureka's compressor is subtle, even when pushed to its maximum—better for gentle musical compression than for extreme effects-type limiting. The sidechain highpass filter was



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PRB MK2

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Optional Adat Output: *\$99

The PRB MKII is a 2U 19" rack-mount preamplifier with a brand new design utilizing features never before possible at this price range! With eight discrete high-quality microphone preamps, Detented gain control, Combo connectors, Separate switches with LED indicators for Phase and Phantom, Insert points on every channel, XLR balanced and 1/4" Unbalanced outputs and with the addition of an optional ADAT™ light pipe output, the SM PRB MKII seamlessly fits into many digital audio workstation configurations.



TB202

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TB101 Single Channel Version *\$149

The TB202 valve (12AX7) mic pre-amp is a twin channel valve mic preamplifier that features independent switchable phantom power, phase reverse, -20dB Pad, optical compressor, and fully functional EQ all housed together in a single 1U rack mount chassis. With a warm valve sound and the addition of an Optical Compressor the TB202 is a tool for those who want that SPECIAL sound this type of equipment can produce. With XLR inputs and 1/4" inputs the unit can be used with microphones or instruments without the need for adaptors.



OCB

*\$499

The Amazing OCB is a rack-mount optical compressor. With eight discrete high-quality optical compressors. Optical compressors are sought after for the distinctive musicality they give to vocals, guitars and other instruments. The OCB's adjustable ratio, attack, release and output controls are calibrated to generate a distinctive soft, rich character while providing magnificent control over dynamics. Fantastic for use as inserts on your multi-channel recording or live tracks.



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IN5 *\$199

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handy for de-essing and other frequency-dependent compression techniques. Gain reduction of the compressor can be monitored on the VU meter, a feature usually found only on high-end units.

The Eureka's EQ circuit, like the compressor, is user-friendly and musical. The inclusion of three bands of fully parametric EQ is remarkable for this price range. Overall, the Eureka won the award based on its winning combination of versatility, control, and excellent sound quality.



Digital Audio Sequencer

ABLETON

Live 4 (Mac/Win, \$499)

APPLE COMPUTER

Logic Pro 6 (Mac, \$999)

This year we declared a tie in the Digital Audio Sequencer/MIDI Sequencer category, mostly because Ableton and Apple delivered extraordinary upgrades, but also because Live and Logic are so different in design and orientation. The October-to-October period covered by these awards saw two upgrade cycles for each product, but for this article we'll focus only on Live 4 and Logic 6.

The big news for Live 4 is the addition of MIDI clips and virtual-instrument hosting. MIDI clips can be created graphically, recorded from a MIDI keyboard, or imported from Standard MIDI Files. The clips are managed in Live's Session and Arrangement views exactly the same way as audio clips, and as you might expect, MIDI and audio clips can be combined in Scenes. The hosting of VST and Audio Units virtual instruments, the inclusion of two built-in virtual instruments, easy and flexible routing of MIDI data, and included MIDI-processing effects all ensure that Live has one foot planted firmly in MIDI territory.

The new Logic Setup Assistant goes a long way

toward taking the pain out of Logic's complex Environment window. The addition of Projects, which collect all data relevant to a song, and the Project Manager, which is a window in to your music database, also simplify things. Arrange window improvements include the ability to hide individual tracks and to lasso and manipulate sections of time spanning multiple tracks using the new Marquee tool. Finally, the addition of channel groups greatly speeds up mixing and automation.

In addition to numerous new features and user-interface improvements, what really put Logic over the top was Apple's decision to bundle all of the Emagic premium virtual-instrument and effects plug-ins with Logic Pro 6. Virtual instruments include the EXS24 mkII sampler, virtual-analog synths ES1 and ES2, and classic instrument emulations EVB3 (Hammond B3 organ), EVD6 (Hohner Clavinet), and EVP88 (Rhodes and Wurliitzer electric pianos). Effects include the EVOC20 vocoder and the Space Designer convolution reverb. That amounts to roughly \$1,500 worth of additional product, all of it first class.

Logic has long been at the forefront of traditional digital-audio and MIDI sequencing with a feature set and attendant complexity to match any in the field. Live breaks new ground in performance-oriented sequencing; it is cleverly designed and streamlined for fast action, while not coming up short on essential features. You would not be likely to choose either over the other.

Digital Audio Workstation/Audio Interface

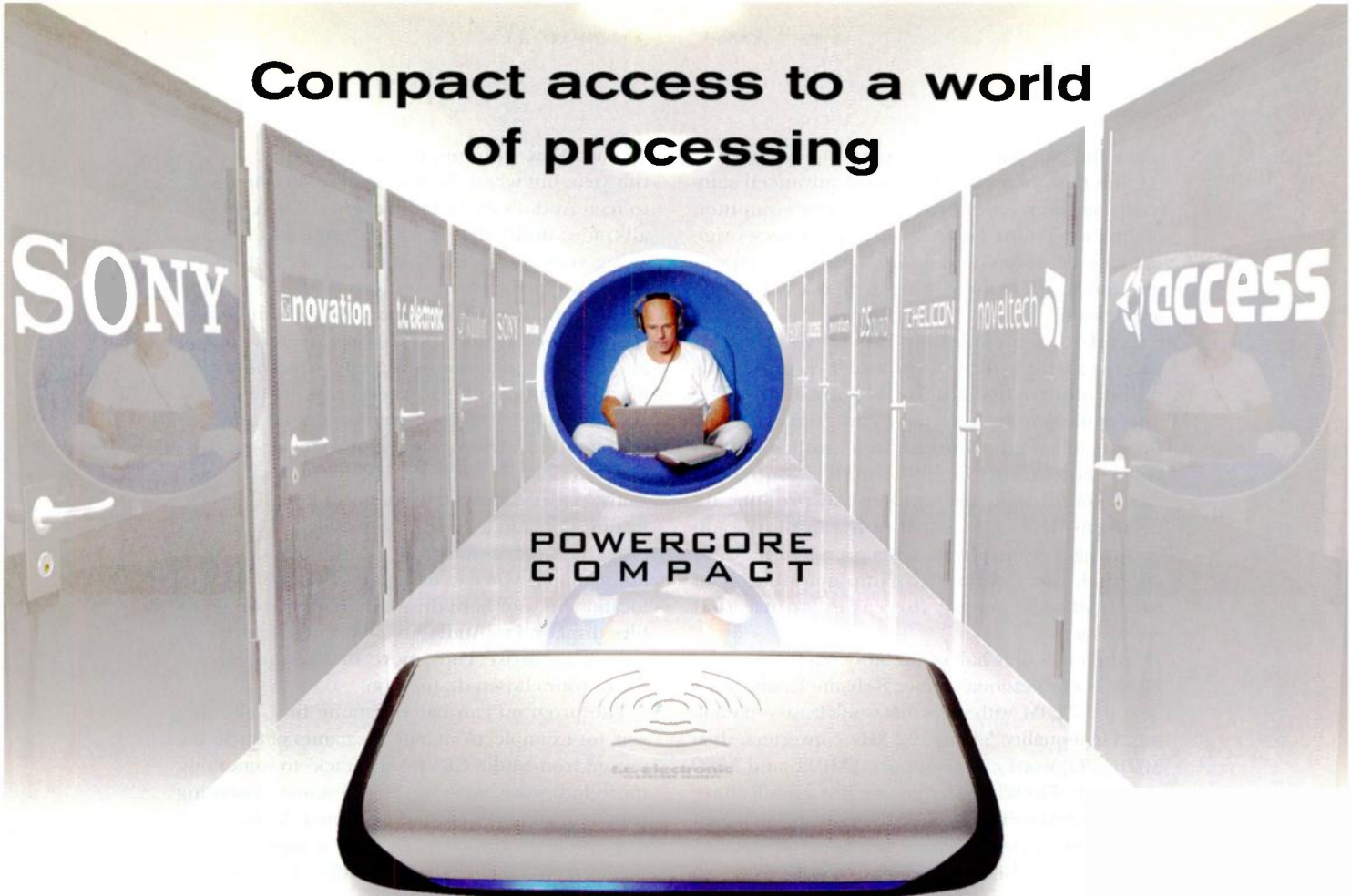
E-MU

EmulatorX Studio (Win, \$799)

E-mu has long been one of the biggest names in the sampling world, yet is one of the last to bring its hardware expertise to the desktop. It was worth the wait. The new EmulatorX Studio



Compact access to a world of processing



The doorway to portable production

PowerCore Compact, the newest member of the PowerCore family, brings a world of processing to VST and AU supported applications*. Lightweight and with FireWire connectivity, it is designed for artists and studios on the move. Right out of the box you get all of the well-known plug-ins from PowerCore Element plus the Master X3, Filtroid, and the Character, a new plug-in from Noveltech. PowerCore Compact is the doorway to professional production and mastering possibilities from TC Electronic as well as unlimited processing power from 3rd party developers. For more information on the complete PowerCore range, visit: www.tcelectronic.com.

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 Vintage CL
 PowerCore 01
 Mega Reverb
 EQSat Custom
 Voice Strip
 Chorus • Delay
 24/7-C Limiting Amp



Element

Master X3
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 Character



Compact

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takes the company's EOS operating system, the engine that drives all of its most advanced sampling hardware, and brings it to your computer, complete with the famous morphing filters, original factory presets, and more. Best of all, you can use EmulatorX as a VST plug-in or as a standalone application.

EmulatorX includes a powerful voice editor for tweaking parameters and a sample editor for destructive editing of your audio. The automatic-patch generator can convert many dozens of samples into a single, multisampled voice, and a resampling feature lets you record every sound that the sampler can produce directly to disk. Like most soft samplers, you can trigger multiple patches on a single MIDI channel, but EmulatorX's implementation of this feature is among the easiest to use that we've seen.

Sampling is only half of the story. The system also includes a professional-caliber, 8-channel audio interface, the 1820M, with specs that won't leave you wanting. High-quality, 24-bit/192 kHz converters, dual MIDI I/O, word clock support, SMPTE and MTC sync, and a FireWire interface are just a few features of the 1820M software. The attractive and well-built AudioDock external breakout box gives you quick access to many of the I/O ports, and the 1010 PCI card that installs in your PC adds even more connectors.

We are particularly impressed with the way E-mu integrates its hardware and software—clearly one of the advantages of buying both from the same manufacturer. For starters, the DSP horsepower provided by the 1820M interface gives you a large number of hardware-accelerated effects that won't add to your host CPU's burden. The PatchMix mixer application comes with dozens of presets, including routings that send audio out and then back into the system, an option to allow the hardware effects to be used by any VST host, and a wide range of user-configurable settings to get the most out of your computer.

If you aren't already amazed by the value that this system offers, consider that you also get a bundle of sample libraries, a full version of Steinberg's Cubase VST, and a versatile file-conversion utility. Starting to get the picture? Buying into the EmulatorX fairly well ensures you'll have a system that just keeps growing, and E-mu has already announced ambitious expansion plans for this outstanding bundle. X marks the spot for this year's DAW/audio-interface award.

Download of the Year

ICED AUDIO

AudioFinder 2.4.4 (Mac, \$49)

The winner of the Download of the Year category is chosen from the software featured in the "Download of the Month" section of our

"What's New" column. We had some fine choices this year, but when the dust settled, the nod went to Iced Audio's AudioFinder, a Mac OS X jack-of-all-trades utility that takes the grind out of managing your audio files. AudioFinder automates and simplifies so many tedious tasks, it's hard to know where to start. And, because something new is added nearly every week (we covered version 2.4, and the program is already at version 3.4), it's almost impossible to keep up.

AudioFinder is a single-window application that opens with a Browser view similar to the Finder's Column view. The difference is that at the file level, AudioFinder displays only audio and MIDI files. Selecting a file immediately starts playback, but that's only the most obvious trick in AudioFinder's bag. For example, you can designate a destination (any location on your hard drive), then step through the files displayed in AudioFinder's Browser and, with a single keystroke, copy, move, or alias the selected file to your chosen destination.

The program can batch-rename files, allowing you, for example, to change the names of tracks imported from audio CDs from "Track" to something more indicative, such as the CD name. Assuming your audio files are properly trimmed, AudioFinder can automatically calculate their tempos and append that to the filenames. AudioFinder also offers typical DSP functions such as normalize and fade, as well as unusual ones, like splicing all selected files or slicing a file into individual hits based on the length of silence separating them. AudioFinder will also convert files to any format supported by iTunes and then automatically add them to your iTunes library.

AudioFinder's Scanner mode displays all audio files on your hard drive, or all files nested within any specified directory, in a single list. You can then refine the list by including or excluding specific text from the filename, the containing folder's name, or the Finder comments. You can even scan an attached iPod and extract its audio content—a feature annoyingly missing from iTunes. If you have audio, you need AudioFinder.



Still the Best

Throughout our 20 year history, Steinberg has developed innovative Mac & PC software solutions that put your creativity first. Our legacy of innovation continues with the super powerful Cubase SX3, the feature-packed Cubase SL3, and the affordable and capable Cubase SE.

Cubase SX remains the most powerful, professional music creation and production system you can buy with remarkable new features like play order track, audio warp, in-place editing, and support for surround sound. Cubase SL provides you the perfect balance between price and performance. And finally, Cubase SE is your gateway to the coolest music production technology the world has ever seen, and it won't break your budget. Over one million musicians realize their musical dreams using Cubase. Visit a Steinberg dealer today to find out why.



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 **steinberg**
Creativity First

Drum Machine/Module (software)

EXPANSION

BFD 1.07 (Mac/Win, \$329)

This year's competition was upbeat to say the least, with editors and authors alike drumming up support for their favorite software drum machine or module. But in the end, we agreed that FXPansion's hot new BFD was



an outstanding choice for both features and content.

One of BFD's unusual features is the ability to mix the balance between a direct mic and three sets of room mics, allowing you to emulate a variety of real and imagined recording environments. The generous use of Velocity layers, together with long samples that capture the full natural decay of each percussion instrument, add realism to the library. They also add heft: each kit is more than a gigabyte in size.

In addition to its mammoth sample library, BFD comes with an extensive library of MIDI grooves (programmed and recorded live), and you can create or import your own. Grooves can be triggered by MIDI note messages or can be automatically shuffled by BFD. Typical creature comforts, such as Swing and Humanize, are also present.

In case BFD's seven kits, which cover a broad range of instrument manufacturers and styles, are not enough, two expansion kits—BFD XFL and BFD 8 Bit Kit—significantly broaden the selection. And in case the program's mic-mixing options don't offer the exact ambience you're looking for, its 17 outputs allow you to apply your own effects plugins to individual instruments. A clever design, a huge and varied per-

cussion-instrument library, and an extensive MIDI groove library make BFD a clear winner.

Dynamics Processor, Digital (hardware)

RANE

C4 Quad Compressor/Limiter/De-esser (\$699)

Bl weary-eyed computer musicians may feel that hardware dynamics processors don't amount to a hill of beans in this world of plug-ins, but pros know that quality hardware still has its place for critical tasks. When the Rane C4 Quad Compressor arrived on the scene, we quickly discovered its award-worthy audio quality, flexibility, and reliability.

The analog-controlled C4 features four identical sets of digital compressor, limiter, and de-esser controls. All four channels can be used independently, and channel pairs 1-2 and 3-4 can be linked for stereo operation. In addition to providing basic compressor parameter controls, the C4 lets users adjust each channel's sidechain signal extensively, using its parametric EQ.

In de-essing mode, bandwidth, frequency, and compression threshold are adjusted to compress only the desired EQ range in the C4's audio output. This process can not only suppress vocal sibilance but also attenuate an unwanted frequency peak in any type of instrument or signal. With Sidechain Listen selected, changes to the EQ of the triggering circuit can be auditioned through the channel's audio output.

We appreciated the C4's range of features and sonic neutrality. No signal muting, switch clicks, or gain changes are apparent when switching between active and bypass modes. The C4 stands out at processing rock-drum overhead mics in stereo-linked mode. The unit's continuously variable knee parameter allows subtle refinement of the compressor's behavior at and around the threshold point. In our tests, the sidechain EQ helped to bring out vocal intelligibility and detail without noticeable coloration on a female lead track. The brickwall limiter worked like a charm at moderate settings.

The C4 treats audio like a quality computer plug-in would, while offering the convenient control of analog gear. Few affordable compressors offer the C4's combination of external sidechain input, built-in de-essing, and parametric equalization of the sidechain signal.



Listen to the XPERTS!



THE O1X

All the Hardware you need for your SOFTWARE based studio



REVIEWER'S PICK 2004 :: Aug. 2004

The Yamaha O1x is the answer to all my needs for integrating everything I do with audio and music. Its bargain price makes it a no-brainer purchase for anyone who wants a DAW control surface, high-quality audio interface and, of course, a hardware digital mixer.

Macworld :: Oct. 2004



KEYBOARD :: Jan. 2004

After using the O1X for a few months, the coolest aspect is that it blurs the lines between a traditional digital mixer, control surface and audio/MIDI interface — it's all three.

Electronic Musician :: Nov. 2004



Considering all the functionality packed into the O1X's silver-gray front panel, its user interface is a miracle of modern ergonomics.

RECORDING

The magazine for the recording musician :: Dec. 2004

Quality inputs and effects and the ability to integrate into your computer setup could make it the perfect centerpiece for your project studio.

REMIX :: Dec. 2004

The converters are great, and the subsequent digital signal processing is fantastic, including the EQs and, particularly, the compressors.

NEW LOW PRICE

See your authorized Yamaha dealer for details.

The O1x now features  STUDIO CONNECTIONS

For more details go to www.studioconnections.org

RECALL

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 **YAMAHA**

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Effects Processor (hardware, analog)

MOOGERFOOGER
MuRF MF-105 (\$439)

Who else but Bob Moog would create an effects pedal that combines a fixed filter bank with a sequencer? The MuRF, short for Multiple Resonance Filter Array, animates eight resonant filters with a pattern generator to provide a wide array of rhythm-based effects that no other analog processor offers.

With a range from 200 Hz to 3.4 kHz, the filter

frequencies are concentrated around the tessitura of the guitar, and each filter has its own envelope generator (EG) and dedicated level control. The sequencer triggers the individual EGs in any of 22 patterns, from up and down stair-steps to random, and you can modify the patterns by changing the individual filter levels.

The overall envelope shape is continuously variable, from a sharp downward ramp wave,

through a triangle shape, into a sharp upward ramp wave. The result is a gradual morphing that moves between gated percussive sounds and reverse-envelope effects, with unusual rhythmic variations along the way.

Like other Moogerfooger pedals, the MuRF gives you voltage control over key parameters—including envelope, rate, and wet/dry mix—allowing you to use pedals, synth modules, or other Moogerfoogers to tweak the MuRF in real time. To twist the sound further, you can shift the center frequencies of the filters with an external control voltage or using the built-in LFO, depending on the sequence selected. Other nice touches include stereo output for creating ping-pong effects, a drive circuit for adding distortion to the sound, and a tap-tempo feature for synchronizing the patterns to your music. With that many features, on top of a killer sound, it was clear to us that, once again, Moog Music has created a winner.

Effects Processor (hardware, digital)

VOX VALVETRONIX
ToneLab (\$600)

Copping this year's award for best digital effects processor meant rising above a field of products that ran the gamut from A (Korg ToneWorks'

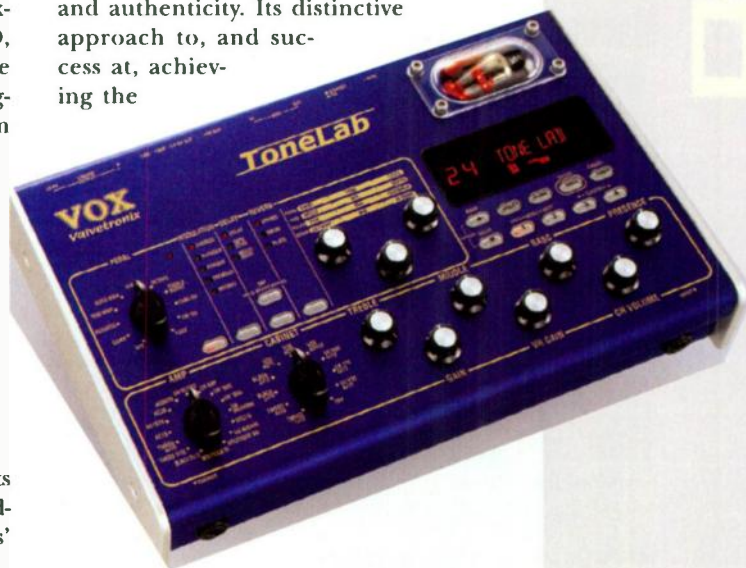
Ampworks) to Z (Z-Systems' Z-Qualizer). The Vox Valvetronix Tone Lab got the nod for being one of the highest-quality amp modelers we've seen and for nailing the features that guitarists hold dear, including real tube-amplifier response.

The ToneLab, a direct descendant of Vox's Valvetronix modeling amplifiers, provides all of the essentials that a serious recording guitarist could want: S/PDIF digital output, a Vox bus pedal-controller jack, MIDI In and Out ports, a Line/Amp level-selector switch, a Standby button, and a ventilation port. The 13 rotary knobs on the face of the unit provide easy access to pedal, modulation, delay, and reverb and tap effects. The ToneLab has 96 rewriteable programs (48 of which are factory presets), broken up into 24 banks of 4. All of this is in support of the heart of the system: Vox's tube-based Valve Reactor power section.

The Valve Reactor section incorporates a real 12AX7 tube and related analog circuitry to more accurately represent the way that a guitar amp interacts with the playing style of the guitarist. The goal is to maintain the "feel and touch dynamics" that are integral components of the final sound. In this section, Vox uses hardware to achieve what other modelers attempt to approximate digitally. Because of the complex gain staging, three parameters (and the master Output Level knob on the rear of the unit) affect the final output level and sound.

After comparing the ToneLab to several of the amps it emulates, reviewer Orren Merton felt that the ToneLab was more responsive than any other modeler he had tried. The unit's touch-sensitivity response is impressive, and the accuracy of the amp models is maintained when the volume settings, pickups, or guitars are changed. The modeled effects are also good, especially chorus and delay, which sound rich and more like guitar effects than digital effects—a good thing for a guitar modeler.

Finally, what the ToneLab lacks in features and variety of sounds, it makes up in quality and authenticity. Its distinctive approach to, and success at, achieving the



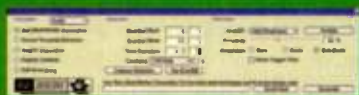
COMPOSER'S PARADISE



Pro Tools LE 6.7 software and the new **Synchronic** plug-in are all about your music. Build out the depth of your mixes with Pro Tools LE 6.7 software's new features, and easily tighten performances with *Beat Detective LE*. While you're at it, put a fresh spin on your loops with Digidesign's Synchronic audio manipulation plug-in. With these powerful tools driving your studio, generating your music has never been more inspiring.



Synchronic



Beat Detective LE

Easy to use • Pro studio friendly • Proven reliability
ReWire enabled • Supports Windows & Mac

 **digidesign**

For more information on Pro Tools 6.7 and Synchronic, visit Digidesign.com.

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Be sure to visit Digidesign at booth #6e06 during the NAMM Convention in Anaheim, January 29-31, 2005.

WRH



truest guitar tone in a moveable box made it a standout choice in a crowded field.

Effects Processor (software)

ANTARES

Filter 1.0 (Mac/Win, \$199)

NATIVE INSTRUMENTS

Guitar Rig 1.1 (Mac/Win, \$499)

We just couldn't decide between Antares Filter 1.0 and Native Instruments Guitar Rig 1.1, so we quit fighting before the police arrived and declared a tie. Although quite different in function, these two outstanding programs have much in common, including intelligent design, flexibility, and great sound.

We'll turn our attention first to Filter. Although the interface for this powerful plug-in appears complex at first glance, it's actually easy to use once you understand its architecture. It offers four separate filter stages and six different routing possibilities: series, parallel, and four combinations of the two. The filters can be configured as lowpass, highpass, bandpass, notch, or all-pass.

A separate delay line is available for each of the filters, providing up to two seconds of delay per filter. Rhythmic effects can be achieved using a pair of 48-step rhythm generators, and you get four Function Generators containing LFOs and envelope generators. The delay lines, Rhythm Generators, and LFOs can all be independently set to sync to the host tempo or run freely. For even more control you get a 12-row, 39-source modulation matrix. An envelope follower lets you alter the way in which the filters are applied over time.

What really makes Filter fun and easy to use is the colorful graphic display in the center that allows you to adjust, in real time, the cutoff frequencies and resonance settings for each of the four filters. Each filter is represented by a different color; you click on one to select it, drag the

horizontal or vertical line (or both), and instantly hear the effect.

Native Instruments' Guitar Rig, is a great-sounding guitar amp- and effects-modeling plug-in that also runs as a standalone application. It is distinguished from the crowd by a super-flexible signal path and a control pedal that comes bundled with the software. We reviewed version 1.1, which features models of Fender, Vox, Marshall, and Mesa/Boogie amps. All sound good and offer a deep editing interface.

In addition to the amps, you get a range of cabinet and speaker models through which you can route your virtual amp. You can use as many cabinets as your CPU can handle. You can further modify your sounds with a selection of mic models and by choosing from several different mic-placement options.

The huge variety of modeled effects includes several types of distortion, delay, EQ, wah, chorus, and more—many of them derived from classic stompboxes. Guitar Rig lets you completely control the order of the effects and even allows you to split signals for parallel processing. By the time you read this, an updated version featuring four additional distortion pedals should have already been released.

Guitar Rig's search features let you hunt through its large library of factory presets, along with any presets that you program or download. Also included are useful utilities, including a tuner, a metronome, and a global noise gate. The software even features dual digital recorders, one of which has pitch- and time-shifting features designed for learning riffs and solos.

The hardware controller includes an expression pedal and four on/off footswitches. You can set it to control or turn on and off virtually any of the effects or parameters. As a result, Guitar Rig is not only handy in the studio, but also as a live-performance tool.

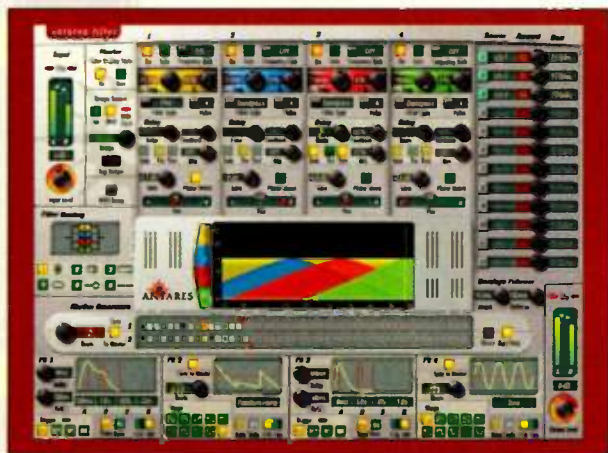
Hybrid Control Surface/Audio Interface

YAMAHA

01X (\$1,699)

When MIDI control surfaces entered the marketplace, most personal studio owners didn't consider them essential. Over the years, prices have declined and capabilities have expanded. Today, you can buy the powerful Yamaha 01X for what still can be considered a bargain price.

The 01X combines the functionality of several devices in a tabletop unit weighing less than 14 pounds. It is a DAW control surface with nine motorized faders and knobs that you can reassign at the touch of a button. It is an mLAN-based MIDI and audio interface with plenty of analog and digital ins and outs. It's also a 28-channel digital mixer that runs with or without a computer, sporting





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mLAN I/O, S/PDIF I/O, eight balanced analog inputs, and four unbalanced analog outputs.

Even with its affordable price, there's nothing stripped-down about the 01X. It offers features galore, such as 4-band parametric EQ and dynamics processors on all 28 channels, two stereo multi-effects processors, and a large, graphic LCD. The 01X is solidly built and performs all of its assigned tasks with ease, simplifying life onstage and in the computer-based recording studio. Once you learn your way around the 01X, you may never go back to maneuvering with a mouse again.

Like other mLAN devices, the 01X connects to compatible equipment by means of a standard FireWire cable. The 24/96 A/D converters sound smooth and transparent, and the effects (which include excellent reverb and guitar-amp simulation) are top-notch. The 01X can make working with DAW software feel like working with a real multitrack recorder. It comes with built-in templates for all of the popular audio sequencers, and it can even control plug-in parameters. To sweeten the pot, the bundled software suite includes four stellar VST (for Macintosh and Windows) and AU plug-ins—Channel Module, Vocal Rack, Pitch Fix, and Final Master—that you can use with or without the 01X.

The 01X delivers everything it promises in a well-designed package that's a pleasure to use. The product is the fruit of years of development and richly deserves this award.



Microphones

RØDE
NT2000 (\$899)

The recent proliferation of good large-diaphragm mics has given us a bewildering selection, and it takes something exceptional to rise above the crowd. In terms of sound, feature set, and value, the innovative Røde NT2000 did just that, winning hands down in the microphone category.

Built entirely in Røde's state-of-the-art Australian facility, the NT2000 includes the new HF-1 capsule, which features a 1-inch, gold-sputtered

diaphragm of the company's own design. But what makes the NT2000 stand out is its onboard, continuously variable control over the polar pattern, highpass filter, and pad. The mic has omnidirectional, cardioid, and figure-8 patterns and allows you to dial in a hybrid pattern to suit your needs. In addition, you can roll off the frequencies between 150 and 20 Hz and pad the level by 10 dB.

To the ears of reviewer Rob Shrock, the NT2000 has the sound of a mature, vintage microphone, with a full low-end and a pleasant boost in the "air" frequencies above 10 kHz. Shrock also noted that the polar patterns offer good off-axis rejection, and the transformerless electronics are exceptionally quiet: the NT2000's self-noise is rated at a remarkable 7 dB.

For only \$100 more, you can go a step further toward a vintage sound and purchase the Røde K2, a variable-pattern, tube-based microphone that uses the same HF-1 capsule. So for less than a grand, you can get a classic sound from either a tube or solid-state mic, but with modern features and specs. The Røde folks hate the phrase "bang for the buck," but we gleefully apply it here in the best sense of the term: the NT2000 is an outstanding mic that happens to be reasonably priced.



Miscellaneous Hardware

MACKIE
Big Knob (\$384)

Because they often mix and process audio inside the computer, many musicians are getting rid of their hardware mixers in an attempt to reclaim space on the desktop. However, you still need a hardware device to simultaneously route a stereo mix to the monitors, mastering deck (if you use one), and headphones. That's where the Mackie Big Knob Studio Command Station comes in.

The Big Knob is an analog device with four stereo inputs, four stereo outputs, three sets of monitor outputs, and one large knob to control the overall level throughout the system. This allows you to route multiple stereo sources (such as a DAT, CD, turntable, and a mix from a DAW) to several destinations. The Big Knob's phono input includes a preamp with RIAA equalization and a grounding post, so you can also ditch your old stereo receiver.

LA-610

Classic Tube Recording Channel

- ◆ *Legendary Bill Putnam Sr. 610 Tube Mic Pre*
- ◆ *Authentic Teletronix LA-2A-style T4 Opto-Compressor*
- ◆ *Vintage EQ, Variable Impedance & DI*
- ◆ *Audiophile Components, Hand-Assembled in the USA*
- ◆ *Groundbreaking Price: MSRP \$1749*



Tube Complement: (1)6072A, (1)6A05, (3)12AX7A

Two Classics, Five Tubes, One Amazing Price

The LA-610 brings UA's legendary vintage "all tube" luxury sound into a modern channel strip format by combining the 610 Mic-Pre/EQ/DI section and a T4 Opto-compressor into a single 2U unit with a groundbreaking price. In collaboration with Dennis Fink, one of the original UREI® analog design engineers, the LA-610 was carefully designed to deliver the essence of the "LA" sound but without the costs of being an exact LA-2A component clone. After the preamp section, the LA-610 offers a new T4 optical compressor. The electro-optical detector or "T4 cell", is the very heart and soul of the Teletronix LA-2A. The unique combination of electroluminescent panel and photo-resistors inside the T4 cell are the crucial circuit components that give both these compressors their signature sound.

Technical Specifications

Input Impedance: Selectable
50k Ω or 2k Ω (Microphone)
20k Ω (Balanced Line)
2.2M Ω or 47k Ω (Hi-Z Input)
Frequency Response: 20 Hz to 20 kHz \pm 0.5dB
Maximum Gain: 40 dB (Line), +77dB (Mic)
Tube Complement: (3)12AX7, (1)6072, (1)6A05



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LA-610

Classic Tube Recording Channel

- ◆ *Legendary Bill Putnam Sr. 610 Tube Mic Pre*
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- Frequency Response: 20 Hz to 20 kHz \pm 0.5dB
- Maximum Gain: 40 dB (Line), +77dB (Mic)
- Tube Complement: (3)12AX7, (1)6072, (1)6AQ5



UNIVERSAL AUDIO
www.uaudio.com
analog ears | digital minds

The Big Knob lets you switch between three pairs of studio monitors, giving you the flexibility to check your work on different speakers. Additional audio outputs, with an independent level control, can feed a headphone-distribution system and a set of monitors for remote playback



in a separate room. With the exception of the phono input, all inputs and outputs accommodate pro- (+4 dBu) and consumer-level (-10 dBV) gear, which alleviates the need for external level-matching devices.

Mackie further extended the Big Knob's list of professional features by including a built-in mic for talkback or slating, a Mono switch for checking phase, a Dim button for lowering the monitor output by 20 dB, and a Mute button. Not bad for a device that, at 12 inches wide and 8 inches deep, leaves plenty of room on your desktop—not to mention plenty of scratch in your pocket.

Monitor Speaker

EVENT ELECTRONICS Studio Precision 8 Active (\$1,499 per pair)

In recent years, some powered monitor speakers have evolved into complete minisystems that offer DSP and dedicated controllers, as well as matching subwoofers and a choice of input connections. In the end, however, it's still sound quality that matters most. Of the nine sets of monitors we looked at and listened to this year, Event Electronics' Studio Precision 8 Active rose to the top because of its stunning audio reproduction. (Incidentally, the Studio Precision line also includes three less-expensive models.)

The Studio Precision 8 Active monitor (ASP8) includes high- and low-frequency trim controls, and an 80 Hz highpass filter can be used when a subwoofer is added to the system. But the speakers sound great in their neutral configuration, and the



monitor's low-end response is good enough to mix a record using them in a traditional stereo setup.

Low frequencies are smooth and extended, without any noticeable rippling, and high frequency response is equally impressive. The mids are neither strident nor scooped but simply neutral, owing in part to the ASP8's tweeter (or "radiator," as Event calls it), which has a concave housing similar to the one used in Mackie's HR824. The result is a smooth top end with a wide sweet spot that sounds accurate.

The ASP8 amplifiers supply a lot of power—200W (Program) for the 8-inch low-frequency driver and 80W for the tweeter—and offers a fine balance of quick transient response and precise stereo imaging. In our opinion, the Studio Precision 8 Active sounds better than some studio monitors that cost twice as much, so they're a bargain, as well.

Most Innovative Product

ZERO-G

Vocaloid 1.02 Leon and Lola (Win, \$229.95 each)

Yamaha has raised the bar on vocal synthesis with its Vocaloid technology, now playing in software from Zero-G. Lola and Leon (and the recently released Miriam) incorporate Yamaha's unique new approach to synthesizing realistic vocal parts. Each of the programs offers a library of phonemes (speech building blocks) that are based on real acoustic-voice samples. But this is no ordinary sample library: the tools for adjusting the synthetic voice are like none you'll see elsewhere. If you have the inclination and some time on your hands, you can build your own synthetic language that your virtual singers can sing.

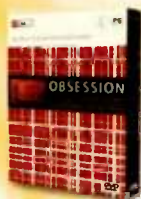
Lola and Leon allow you to enter notes on a multitrack sequencer-like interface, and then add text as you would in a notation program. Once you have finished the notes and text, you can turn to a number of "expression" parameters to add realism to your virtual vocalist. At the bottom of the main screen are settings for standard parameters such as note Velocity and Pitch Bend, but when's the last time you saw Noise, Harmonics, Brightness, or Gender Factor settings? Each of the latter group can make a significant impact on the voice's timbre and can vary over time either note by note or throughout the length of an entire phrase.

Real vocalists use vibrato, and with Vocaloid, you can create exacting amplitude envelopes containing dozens and dozens of breakpoints for each individual note. You can also employ a variety of preset or custom attacks, crescendo and diminuendo marks, and dynamics. If you really want to get to the heart of the matter, the Phoneme Editor provides access to the

Award Winning Loops

Some sample companies will try to sell you 100 megs for \$49. An average Big Fish Audio product contains over 600 megs of samples from today's award winning producers. Big Fish Audio products have won just about every industry award out there. Established in 1986, Big Fish Audio is the oldest and most critically acclaimed sample library company in the world.

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Loopalicious RnB

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Audio/WAV/REX

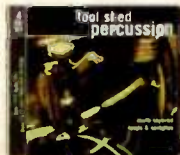
This little treat is brand new from the producer of the legendary Off the Hook. Trip out on these construction kits, packed full of Off the Hook, signature guitar licks, piano chops, Rhodes nastiness, sexy strings, tripped out leads and pads, plus all those drum sounds you've been calling us about! 58-102 BPM, these kits are so produced and ready. Loop one up for your lady tonight.



Neo Soul

\$99⁹⁹
Audio/WAV

Reminiscent of 70's soul music combined with new millennium Hip Hop, Jazz & R&B, Neo-Soul has been conquering clubs the world over. Veteran producers, songwriters & artists heat up this simmering cauldron of construction kits, oozing Hip Hop & R&B at an ethereal level & celebrating soul music's resurgence. Enhance your library with just the right amount of sweat, longing and passion.



Tool Shed Percussion

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Audio/WAV/REX/Acid

Some of the most unique loops and samples ever released! This beautifully recorded library features one-of-a-kind "found" instruments, such as steel tine leaf rakes, singing saw blades, bowed gas tanks, crusty paint rollers, pleather suitcases and thunderous sheet metal. From hip-hop to film soundtracks, rock to electronic, these organic percussion loops and samples, are sure to give your music unique flavor!



Ghetto Grooves Vol. 2

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Audio/WAV

This bangin' sequel gets you hyped up with slammin' construction kits... then a blazin' hot selection of Bass and Synths samples. To top it off, we hit you with a bunch of Kicks, Snares and Hats. Everything you need to make the phattest Hip Hop and RnB tracks. Including 800 Kicks, 1000 Snares, 775 Hats and Cymbals, 145 Bass and 115 Synth samples.



LA Drum Sessions

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WAV

LA Drum Sessions is just that: session drummers laying down phat, thick, luscious beats, in about every style you can think of. All divided up into folders of related loops by style & tempo; different recording setups; 3 versions of each performance: dry, room-mic only & mixed. Over 80 categories of styles; over 6000 loops; Jazz, Rock, Disco, 60's Fun, Funk, Punk, Country, Blues, Texas Shuffle & more.



Smokers Delight

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Audio/WAV/REX



New from e-Lab... this joint is packed with loungin MPC & turntable loops & phrases, loads of funky & dubby basses, jazzy horns & flutes, mellow guitars, vintage wurlitzers & rhodes, hip hop beats & cracklin' breaks. All you need to create that weed smokin, head-spinning, chill-out monster you always dreamed of. "5 out of 5 ...The kits exude a smoky, relaxed vibe that masks the actual complexity of the compositions." - SOS



Click.

\$99⁹⁹
Audio/WAV/Acid

Whether you call it "glitch music" or "microsound" or "laptop electronica," it's the sound of the digital error. The space between the ones and zeros, turned into music. The laptop has become the instrument, throwing aside the need to reference anything but numbers, the soul of the machine. It's time to cast off the shackles of analog banality, because with the collection of sounds on this CD, you're ready to build the foundation for your next digital opus.



Hit Zone 2

\$99⁹⁹
REX/Refill/WAV/Acid

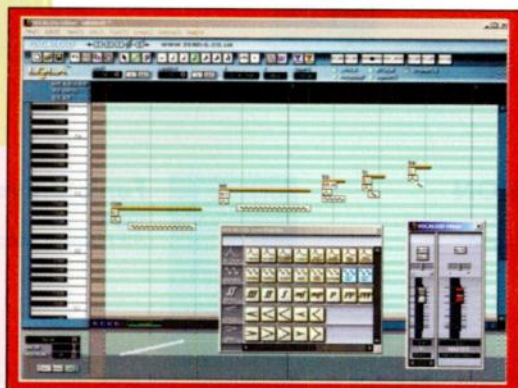
Going even deeper into the Top 40 Pop/Hip Hop/R&B bunker, Big Fish Audio has launched a full-scale sound assault. Packed with basses, beats, keys, licks, fills and funky FX- culminating in a huge collection goodies sure to propel your ideas from conception to completion. With more beat zones, construction kits and new to this release super-subtacular bass zones and delicious turn around transit zones, HZ2 will slam your mixes into overdrive.

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individual syllables that are used to generate a vocal part, and there are numerous ways to alter the program's operation as it renders your music and lyrics into synthetic speech.

It's not trivial to get a realistic voice part using a Vocaloid program, and we'd like to see a more up-to-date interface for the software. There's no way to enter notes in real time (using a MIDI controller, for example), and a lot of trial and error is required to make a voice sound expressive. But that shouldn't stop you from exploring one of the most distinctive synthesis applications to come along in a while.

Notation Software

SIBELIUS

Sibelius 3 (Mac/Win, \$599)

A professional notation program needs to be powerful and flexible and must smoothly handle the needs of a diverse group of musicians, ranging from songwriters making lead sheets and jazz musicians writing horn charts to classical composers arranging for orchestra. Most important, it must do its job without substantially interrupting the user's creative flow.



There are two perennial leaders in this software category: MakeMusic's Finale and Sibelius Software's Sibelius. Both are stellar products, have legions of loyal followers, and were updated in the past year. But this year's Editors' Choice award goes to Sibelius 3, a superb upgrade that offers an outstanding combination of power and intuitive ease of use.

Of the 170 new features in Sibelius 3, perhaps the most talked-about is the Kontakt Player Silver, a sample player derived from Native Instrument's Kontakt. It gives users the ability to listen to and produce their compositions with 20 quality instrument sounds, including a Bösendorfer piano, strings, brass, percussion, and woodwinds. You can upgrade that to Kontakt Player Gold, which features 64 pitched and 100 unpitched instruments. Once you're satisfied with the sound of your composition, you now can save it as a WAV or AIFF file and burn it to CD. You can also save it as an MP3 for posting to the Web.

Other new features and enhancements in Sibelius 3 include improved beaming, optical spacing, better Flexi-time (notation of MIDI-performances) implementation, and the ability to transpose guitar-chord diagrams. It's also easier to make your score look better in Sibelius 3 because you can globally apply font changes and add color to virtually any object.

The software's plug-ins help you accomplish a wide range of specific tasks and make the program even more user friendly. Version 3.0 adds 30 new plug-ins, including Add Accidentals to All Notes, Realize Figured Bass, Add Drum Pattern, Straighten Swung Eighths, and Convert Folder of Scores to Web Pages.

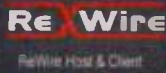
We often wonder what a developer can add to mature software that hasn't already been provided. Sibelius 3 answers that question with a plethora of new features while maintaining, and even improving, ease of use. We love it!

Preamp

M-AUDIO
Octane (\$749)

Eight-channel preamp/converter combos are becoming increasingly popular because musicians want a better sounding DAW front end than small-format mixers and sound-card converters normally offer. In response, M-Audio has combined its experience in digital-audio interface design with its latest preamp technology to create the Octane, a DAW front end that sounds good and won't empty your bank account.

Besides having eight phantom-powered mic preamps, the Octane has an ADAT Lightpipe digital output and eight balanced, 1/4-inch analog inputs and outputs. You can use the analog I/O for inserting effects between the preamp and



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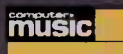


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digital output, and it also makes the Octane into a handy, standalone A/D converter for line-level signals. M-Audio didn't forget to include such studio staples as word clock I/O for timing stability, phase-reverse switches, and a highpass filter for removing low-frequency artifacts.

A number of other pro features give the Octane a leg up on the competition. The requisite high-impedance inputs for running your guitar or bass



direct have dedicated preamp circuits designed to deliver the best signal-to-noise ratio for those sources. In addition, channels 7 and 8 include an M-S matrix encoder with a Width control, offering post-production stereo adjustability and superior mono compatibility. With such a wealth of features and excellent sound, it should be no surprise that the Octane took the award for best preamp this year.

Reverb Processor (software)

WAVES

IR-1 1.0 (Mac/Win: \$800 native, \$1,200 HDTM)

Convolution technology makes it possible to produce a variety of effects by combining the spectra of two audio files. Typically, a source file is convolved with a sample of an actual acoustic space (known as an impulse response, or IR), to produce extraordinarily realistic reverb effects. But as cool as it might be to make an instrument sound like it's being played in a cathedral, a forest, or a circular glass room, some complain that convolution reverbs just don't offer enough traditional reverb parameters.

Waves set out to develop a plug-in that provided the best of both worlds: realistic sampled spaces and familiar reverb controls. The result is IR-1,

which runs in a wide range of native plug-in formats for Mac and Windows, yet also offers control of common digital-reverb parameters, such as room size, density, early reflections, and reverb tail. These reverb parameters directly interact with the room sample; they aren't just tacked on. In addition, IR-1 sports a 4-band parametric equalizer that gives you precise control of the reverb's frequency spectrum and is similar in look and feel to Waves's EQ plug-ins.

An included library of meticulously sampled IRs allows you to place your audio in spaces such as the Ryman Auditorium (the former Grand Ole Opry), the Sydney Opera House's Concert Hall, the Knitting Factory, the (late-lamented) Bottom Line club in New York, Trinity Church, Cello Studios, Westlake Studio, the interior of a Ford Econoline van, and plenty more. Also included are synthesized IRs and IRs sampled from a classic hardware reverb.

For those who want more IRs or want to use other audio files as IRs to produce unusual effects (another great use for a convolution processor), IR-1 can load WAV files as impulse responses. That is particularly handy because most downloadable IRs on the Web are in WAV format.

Like other convolution processors, IR-1 uses a hefty chunk of processing power. Mindful of that, Waves gives users a low-CPU option and a choice of several configurations, the simpler of which use fewer CPU cycles. Depending on the nature of your source file, IR-1 configurations range from mono-to-mono with one convolution to stereo-to-stereo with four convolutions.

This is one impressive plug-in: IR-1 was an easy award-winner in its category. In the "making a good thing better" department, shortly before we went to press Waves released version 2.0, which offers a number of enhancements and an improved IR library.

Sample Player (software)

IK MULTIMEDIA

SampleTank 2 XL (Mac/Win, \$499)

Hardware synths have one major advantage over their software equivalents: you can just turn them on and start playing. If the instrument is a "rompler"—a ROM-based sample-playback synthesizer—you usually can select from dozens of timbres representing every family of instruments. Because of their versatility, romplers have dominated electronic music production for at least 15 years.

Behold the virtual rompler: SampleTank 2 XL, from IK Multimedia, is the second incarnation of the plug-in that launched a thousand sessions. Boot up your DAW program, open SampleTank, and start playing. Unlike hardware-based synths, this collection of sounds isn't measured in mere MB:



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Judging from recent magazine reviews, if you're thinking about buying a new set of studio monitors, you should be thinking about the TAPCO S-Series. With their genuine Mackie-designed pedigree and top-notch components, the TAPCO S•5 and S•8 nearfield monitors and new SW•10 subwoofer are being praised as the best in their class. Need a second opinion? Give your Sweetwater sales engineers a call and ask 'em what they think. That should say it all.

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we're talking 4.5 GB, a sample library more than twice as large as the previous version's. Acoustic pianos, electric guitars, orchestral instruments, drum 'n' bass loops, ethnic percussion grooves—



you name it. SampleTank 2 XL has it. If you need more sounds, it can import data from Akai sampler discs as well as WAV, AIFF, and Sound Designer II files, and can automatically assign them to note and Velocity ranges.

Another improvement is that SampleTank can now sync loops to sequencer tempo. In addition to straight sample playback, SampleTank 2 offers two new sound engines. Pitch-Shift/Time-Stretch (PS/TS) lets you alter tempo without affecting pitch, which works best for drums and other unpitched material. The Stretch engine smoothly transposes pitch

without changing the formants or tempo; Stretch works miracles with sustained monophonic tones.

SampleTank 2 is 16-part multitimbral and offers more than 50 new user parameters, providing plenty of opportunity to modify its factory-sound library. Dynamics and effects are vastly improved, borrowing algorithms from IK Multimedia's AmpliTube and T-RackS, and you can automate as many as eight effects parameters simultaneously. Put it all together, and SampleTank 2 XL is a worthy replacement for your hardware-based rompler—and an obvious Editors' Choice award winner.

Sound Design Workstation

SYMBOLIC SOUND

Kyma X System (Mac/Win: \$3,470, base system)

The good folks at Symbolic Sound have been at it again: Kyma X, the newest release of what has been called "the most powerful sound-design workstation on the planet," is so full of new and updated features that it was the hands-down winner in this year's voting. Not only does the new version sport a dramatically improved user interface, new sound-processing modules, and a massively updated user's manual, but it also has enhancements throughout nearly every main area of the program.

Kyma X is a modular sound-design system offering hundreds of modules for your sampling, synthesizing,

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Antares Audio Technologies—tel.: (888) 332-2636 or (831) 461-7800; email: info@antarestech.com; Web: www.antarestech.com

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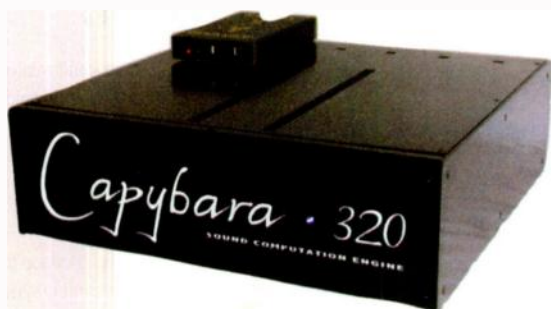
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and processing pleasure. It uses a box (called the Capybara) full of reconfigurable Motorola DSPs to accelerate the production and processing of sound. The Capybara attaches to a Windows or Mac computer via a new FireWire interface called Flame, which, among other tricks, increases the number of functions that the system can perform at the same time. Kyma X can simultaneously analyze an incoming audio signal and resynthesize it using hundreds of sine waves (or other sound sources); play back 20 different sound files from disk, each of which is stretched or compressed in real time under the control of a MIDI source; and randomly trigger a sequence of MIDI note events that "play" their own synthesis modules.

Kyma X's Virtual Control Surface, a highly customizable, real-time control interface for manipulating sounds, has been greatly enhanced. You can now design custom control surfaces with the number and types of controls you need. Support for more types of input controllers (such as a mouse) further enhances the system's real-time performance capabilities. Working in the Timeline is easier than ever; you can now play back only isolated regions on any number of tracks. And the updated spectral-analysis functions make resynthesizing stereo files quick and easy.

On the new online users' forum, you'll find many dozens of user-contributed Kyma X patches and several new modules, including one module



that generates 2-D graphics. And just as we went to press, Symbolic Sound announced yet another significant upgrade, adding an oscillator that can morph between waveshapes over a single cycle!

If you haven't yet heard Kyma X, you can start with the excellent online examples on Symbolic Sound's Web site. But be forewarned, you might get hooked!

Synthesizer (software)

GFORCE

impOSCar 1.01 (Mac/Win, \$179.95)

One of the most sought-after electronic instruments of all time is the OSCar, a quirky one- or two-voice synth (depending on the version) produced in the mid 1980s by

THE AWARD WINNERS IN REVIEW

Almost all of our award winners have been reviewed in our pages or soon will be. For products with reviews still in progress, we have completed enough tests to feel confident about our conclusions; most, if not all, of those reviews will be published in the next two issues.

An article title enclosed in quotes indicates that the product was covered in a feature or "What's New" column rather than in a review. All other entries indicate reviews of the award-winning version.

All published articles are available for download from the EM article archives at www.emusician.com.

Ableton Live 4	December 2004
Algorithmic Arts ArtWonk 1.2	September 2004
Antares Filter 1.0	June 2004
Emagic (Apple) Logic Pro 6	June 2004
E-mu EmulatorX	In progress
Event Electronics Studio Precision 8	May 2004
FXPansion BFD 1.07	May 2004
FXPansion BFD 1.0.811/"Beat Generation"	September 2004
GForce impOSCar 1.01	November 2004
i3 Software DSP-Quattro 1.5	June 2004
Iced Audio Software AudioFinder 2.4.4/"What's New: Download of the Month"	November 2003
IK Multimedia SampleTank 2	April 2004
Korg Legacy Collection 1.0	October 2004
Mackie Big Knob	In progress
M-Audio Octane	December 2004
Moog MuRF MF-105	In progress
Native Instruments Guitar Rig 1.0	January 2005
PreSonus Eureka	June 2004
Rane C4 Quad Compressor	December 2004
Røde NT2000	June 2004
Sibelius Sibelius 3	June 2004
WaveLab 5.0	December 2004
Symbolic Sound Kyma X	October 2004
Vox Valvetronix ToneLab	April 2004
Waves IR-1 1.0/"Trading Spaces"	October 2004
Yamaha 01X	November 2004
Zero-G Vocaloid 1.02 Leon and Lola	August 2004



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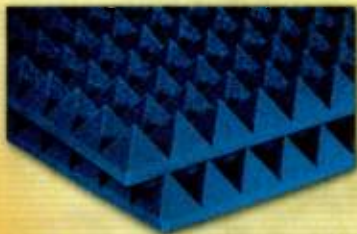
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the UK-based Oxford Synthesizer Company (OSC). The OSCar had digital oscillators, analog filters, and an additive-synthesis engine. Its rather bizarre case was made of plastic, wood, and rubber, but it had a sound all its own—all its own, that is, until impOSCar came along.

GForce, makers of the virtual ARP Odyssey (Oddity) and the virtual Mellotron (M-Tron), gave impOSCar powers beyond those of its hardware-based inspiration, including 16-note polyphony, chorus and delay effects,



and many filter modes. Create your own additive waveforms graphically using impOSCar's Harmonic Editor and sync the LFOs to tempo. Every control is MIDI-assignable and responds to sequencer automation.

The most outstanding attribute of impOSCar is its sound. It not only sounds like the OSCar, but it also goes beyond the original. Just like its precursor, it makes sounds that are thoroughly unique. Dozens of presets are included, and you can download additional presets from the Web. If you can get your hands on the real McCoy, impOSCar can even import OSCar sounds as SysEx data. The impOSCar sounds great, it's easy to program, and it's tremendously versatile—adding up to a winning choice for EM editors.

Synthesizer Bundle (software)

KORG

Legacy Collection (Mac/Win, \$625)

Given recent developments in music software, you might expect every vintage synth to be replaced by a software emulation. We have no problem with that if manufacturers do as good a job as Korg has done with its Legacy Collection.

The Legacy Collection reproduces every detail of Korg's classic MS-20, Polysix, and Wavestation synthesizers, adding new user interfaces, more polyphony, easier programming, and assignable MIDI control of every parameter. The sound quality is simply astounding: this cross-platform bundle has absolutely nailed the flavor of the originals. The

Legacy Collection also includes the versatile multi-effects plug-in MDE-X and the unique MS-20iC hardware controller. To top everything off, a surprisingly low price makes this software/hardware combination one of the best bargains of the year.

The software version of the Polysix does everything that the hardware version did and more. LFOs and arpeggios sync to tempo, 6 voices have grown into 32, and Unison mode lets you play every voice with a single note. The software Wavestation offers all the niceties of its hardware namesake and adds the convenience of graphical onscreen programming. (Ever wanted to graphically edit wave sequences? Now you can.) Wavestation contains every wave and timbre found in the Wavestation SR (the last hardware model), and it imports SysEx data from any Wavestation.

Ask any serious analog synthesist: the original MS-20 is legendary. This monophonic instrument had a patch bay to interconnect its circuits, giving it most of a modular synth's flexibility and ensuring that it generated sounds that other synths could not. Its software counterpart supplies all of the original's features, including the patch bay. Not content with merely letting you drag virtual cords from one jack to another, however, Korg built the MS-20iC, a miniature hardware emulation of the MS-20 that works in conjunction with the MS-20 software. You can connect virtual circuits using real patch cords, and the software responds to every hardware control. As a bonus, you can use the MS-20iC to control other soft synths, too.

There is more: a new virtual synth called Legacy Cell lets you combine synths and effects processors to create a hybrid. Blend Polysix with MS-20, combine one MS-20 or Polysix with another, or insert either synth into Legacy Cell and add multi-effects to create new timbres. Legacy Cell's Performances supply 21st-century sounds that neither synth could produce on its own. Korg's Legacy Collection goes further than any other synthesizer suite, taking your music forward into the past.



beyond your imagination

SONIK SYNTH 2



SONIK SYNTH 2
8 GB of samples
Over 5,000 sounds
\$399

Available as RTAS, VST, DXi and AU plug-in in Mac OS® X and Windows® XP for Pro Tools®, Cubase®, Logic®, Sonar®, Digital Performer® and other compatible host/sequencers.



Sonik Synth™ 2 is an integrated synth workstation plug-in offering ten times the sonic power of hardware workstations combined with a virtual museum of vintage keyboards, all in one software instrument!

First class sound material compiled over the last ten years from Sonic Reality brings you the most comprehensive range of synth waves, film soundscapes, vocal textures, searing leads, punchy analog basses, atmospheric pads, dynamic pianos, vintage keyboards, majestic guitars, powerful drums and more ever assembled into one sound module! A massive selection of Single and Combi Presets are instantly available to compose, arrange and produce music in any style right out of the box! Creating and morphing your own sound in millions of possible flavors has never been faster with Sonik Synth™ 2's easy access to individual sound elements and intuitive synth parameters. Unlimited musical inspiration from one powerful source.

Sonik Synth™ 2. Beyond your imagination.



- 16 part multi-timbral sample-based synth workstation
- Over 5,000 sounds - 8 GB of samples
- Includes 32 analog modeled DSP effects - 5 per instrument
- Multiple synth engines including STRETCH™
- A complete virtual synth museum inside
- Multi-platform virtual instrument - sounds also compatible with SampleTank® 2



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IK MULTIMEDIA
MUSICIANS FIRST

John Frusciante's Creative Explosion

The Red Hot Chili Peppers' guitarist muses on his solo CDs, distaste for computers, and love of vintage synths.



MIKE PISCITELLI

John Frusciante is a man of extremes. At the tender age of 33, he's already experienced the best and worst that life has to offer. The former refers to his continuing fame and success as the guitarist of the Red Hot Chili Peppers. The latter involves the depths of depravity to which he descended during a long spell as a drug addict in the mid-'90s. When he resurfaced after rehab, his body was so ravished that he needed a new set of teeth and skin grafts to repair the needle scars on parts of his skin.

Frusciante's two tours of duty with the Red Hot Chili Peppers (1988-92 and 1998-present) predate and post-date his lengthy descent into depravity. During both stints he's been a driving

creative force in the band, adding a strong melodic and rhythmic identity with his distinct guitar playing and songwriting.

Frusciante has more creative capacity than he can channel through the Red Hot Chili Peppers. He also has a solo career that began ten years ago when he released his first album, *Niandra LaDes and Usually Just a T-Shirt* (American Recordings, 1994). It was recorded at home on a cassette 4-track and a hi-fi stereo system. The follow-up, *Smile From the Streets You Hold* (Birdman, 1997), was made with the same low-tech gear as its predecessor. Frusciante notoriously claimed that he put the latter album out purely for drug money.

By Paul Tingen

"We Switched"



Grandmaster Flash

Producer / DJ / Recording Artist



Francis Buckley

Multi-Platinum Grammy-Winning
Engineer / Producer



John Rodd

Orchestral Scoring Recordist
Music Scoring Mixer



"Prince Charles" Alexander

Multi-Platinum Grammy-Winning
Engineer / Producer



Anthony Myers

Engineer / Producer
Sound Designer



Gerhard Joost

Multi-Platinum Engineer
Mixer / Producer



Andraé Crouch

Multiple Grammy-Winning
Gospel Singer / Producer / Pastor



Lionel Jarvis

Multi-Platinum Musician
Musical Director



DJ Ron G

Remixer / DJ



Steve Pageot

Grammy-Winning Producer
Musician / Composer / Engineer



Brian Adler

Composer / Producer
Recording Artist



Michael Jay

Emmy-Winning Composer / Engineer
Editor / Studio Consultant

Studio Precision™ Bi-amplified Direct Field Monitor

Features: 5.0 Ease of Use: 5.0

Audio Quality: 5.0 Value: 5.0

Cons: None —*Electronic Musician*

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Just exactly what is a

DIGITECH® GNX4 MULTI-MODELING GUITAR WORKSTATION

USB Audio/MIDI Interface
Stream audio and MIDI to and from your computer via the integrated USB Audio/MIDI interface.



Eight-Track Digital Recorder
Hands-free recorder makes capturing your musical ideas quick and easy.



Expression Pedal
Real time control of effects parameters, volume, and wah.



Stomp box modeling features ten of the world's most popular distortion pedals.



The DigiTech® GNX4 Guitar Workstation

Jam Man™ Looper on steroids! Eight tracks & hours of looping time.



Guitar Cabinet and Amp Multi-Modeling
Unlimited user amp+cabinet creation thanks to DigiTech's exclusive Warp knob.

Direct Box
Run direct to the front of house mixer with selectable Speaker Compensation.



Guitar Tuner
Built-in tuner when you need it.



A small fortune in hook-up cables
No re-patching necessary.



Made in the USA ■ Designed by fanatic, guitar-playing engineers in the Rock 'n' Roll underground of Salt Lake City

Guitar Workstation™



PERFORM ▶

PRACTICE ▶

CREATE ▶

RECORD ▶

Applications Guide



DigitTech
The Power to Create

Guitar Workstation

Hands-Free Multi-Track Digital Recording

provides guitar players with everything they need to Perform, Practice, Create, and Record. Being guitarists ourselves, we know that when you are playing you have your hands full. This is why we created an intelligent user interface to make everything work the way you need it to... Hands-Free. The Guitar Workstation and all its features are there at your feet ready whenever inspiration strikes.

Not only is a Guitar Workstation a great tool in the studio, it can also follow you on stage and be your entire live rig as well. Would you expect anything less from DigiTech®, the world's leader in guitar modeling processors?

Eight-track digital recording at your feet.

How many times have you come up with a killer riff and then lost it? Not any more. Just hit **RECORD** and capture it on a Compact Flash card®, or leave the Guitar Workstation in constant record mode and always have a copy of your latest riff, with or without effects.

The onboard recorder doubles as an 8-track **Jam Man™ Looper** that saves your loops rather than losing them when you power down. You can even "re-amp" the recorded tracks back through the Guitar Workstation's arsenal of guitar/amp models and effects to add reverb, compression, EQ, and more.

Computer recording made easy.

Just connect a USB cable from the Guitar Workstation to your Mac® or PC and you have a state-of-the-art. **6-channel (4 record, 2 playback) 24-bit audio/MIDI interface**. Now you can take advantage of the professional multi-track recording software that is included.

Pro Tracks™ Plus for the PC is an easy-

to-use, 32-track recording suite with everything you need to track, edit and mix your masterpiece. Features include 24-bit stereo tracking, unlimited MIDI tracks, sequencer with event editing and DXi plug-in compatibility.

BIAS® Deck 3.5

SE turns your Mac into a serious recording tool with 64 tracks, up to 999 virtual tracks and realtime signal processing with VST plug-in compatibility.

Lexicon® Pantheon™

studio-quality reverb plug-in for Mac or PC with 35 factory presets, six reverb types and 16 editable parameters per reverb type.

X-Edit™ Editor/Librarian for Mac and PC and **Cakewalk® Pyro Express™** CD burning software for the PC.

Eight-channel mic/line mixer.

It does more than just mix the built-in recorder tracks: You can also use it to mix vocal and line level instrument inputs, MP3 tracks and the MIDI drum machine with your guitar — either for performance or during recording.

A studio-grade mic preamp.

You know we're serious when we add a high quality dbx® **mic preamp** with true 48V phantom power for studio condenser mics. Even if you only use the Guitar Workstation preamp live, you'll love its headroom on stage with dynamic mics.

A serious General MIDI Drum Machine.

We created a built-in **drum machine**



*Compact Flash card not included

PRACTICE

CREATE

RECORD



that is every bit the equal of a standalone model. When you hear some of the 100+ rhythms and eight different drum kits, we think you'll agree. Plus you can create and download your own MIDI patterns.

MP3 Player and Compact Flash card-reader built-in.

One of the best sources for practice lessons (and of course complete songs) is the Internet. So we gave you a way to plug 'em right into the Guitar Workstation and play along with the music.

The *Compact Flash reader/writer* also gives you a way to save user effect presets and anything you play via the built-in 8-track recorder.

Multi-modeling floor processor.

At its heart, the Guitar Workstation is

a fantastic multi-modeling floor processor. Choose from 15 guitar and 10 bass amp/cabinet models — everything from a British combo to a Tweed, Rectifier, and a Blackface. Plus you can warp any amp combination into your own Hypermodel™.

The Guitar Workstation also replaces an entire pedal-board and rack full of processors and stompboxes (up to 11 at a time) — everything from distortions, chorus', Whammy', delays, reverbs, and more.

Along with a *chromatic tuner*, the Guitar Workstation has a built-in *direct box* so you can run direct to the front of house mixer with selectable Speaker Compensation.

Visit www.guitarworkstation.com for on-line tutorials, demos, links and more information.



**Coffee House/Solo
Large Stage**



Large Stage Performance

A large stage rig lets you really pull out the stops since space isn't necessarily an issue, but volume usually is.

Plug your guitar into the Guitar Workstation™ and the 1/4" line outputs into two amps. Using two amps gives you more dramatic stereo separation and a wider sweet spot for your sound. You are also in control of your own level onstage.

Next, run the XLR outputs directly out to the house and have the sound engineer control your sound here.



*Compact Flash card not included

Coffee House/Solo Performance

As a solo performer, we all know how important it is to minimize the amount of gear we have to cart to a gig. For the more elaborate system, this may include electronic keyboards, a CD player, and a mixer.

The Guitar Workstation™ virtually eliminates the need for most of this hardware. First, for your backing tracks, just rip your recorded tracks into MP3s and

place these in the MP3 folder created by the Guitar Workstation on a Compact Flash card*.

If you need a mic for vocals or an acoustic instrument, just plug it into the Guitar Workstation's XLR mic input. You have a variety of routings you can select from including taking advantage of the effects processing.

For the more advanced setup, or if you have a partner on keyboards, just plug them into the Guitar Workstation's 1/4" line inputs and select the appropriate routing needed.

Everything can now be run out the Guitar Workstation's XLR outputs directly into powered speakers. You can even run to a powered floor monitor out one of the available 1/4" line outputs and enable Speaker Compensation on both pairs of outputs.



**MP3 Lesson Downloads
Band Rehearsal**

The Guitar Workstation™ features an MP3 player that can be used with today's guitar magazine MP3 lesson downloads, making it the ultimate practice partner. Just install the drivers from the included Utility CD, connect your Guitar Workstation to your computer via USB, and insert an optional Compact Flash card*. Next, press the **CF STORAGE** button in the recorder panel if it isn't lit.

On a PC, the Guitar Workstation will appear as a new removable device under "My Computer". On a Mac, a new drive will appear on the desktop. Double click the new icon to open it. You will see four new folders (MIDI, SONGS, PRESETS, and MP3). Copy your MP3 files into the Guitar Workstation's MP3 directory. When finished, press the **CF STORAGE** button again to disconnect the Guitar Workstation from your computer.

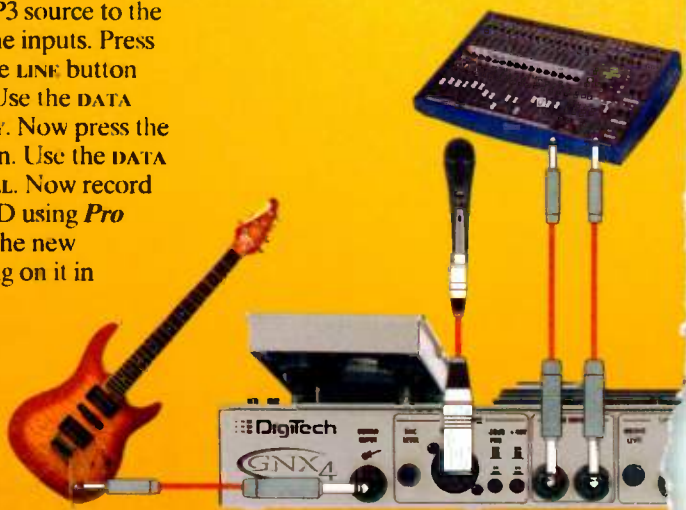
Now press the **PATTERN** button and use the **DATA WHEEL** to navigate through each of your MP3 files individually (located after the last factory drum pattern). You now have your own portable tutor ready to help you learn.

Using Learn-A-Lick™ within Pro Tracks Plus™

Connect a CD or MP3 source to the Guitar Workstation's line inputs. Press the **SHIFT** button then the **LINE** button on the recorder panel. Use the **DATA WHEEL** to select **LINE DRY**. Now press the **CF/USB 1-2 SOURCE** button. Use the **DATA WHEEL** to select **STEREOALL**. Now record the phrase from your CD using *Pro Tracks Plus*. Highlight the new recorded data by clicking on it in



the display. Select **PROCESS>LENGTH** from the menu. Check the **STRETCH AUDIO** check box. Increase the amount to 200% for half speed or 400% for quarter speed playback without changing pitch. Set loop points to focus on that one note or phrase.



*Compact Flash card not included

MP3 Lesson Download and Playback



Band Rehearsal with Guitar Workstation™ Tracks

Take your latest creations on your Compact Flash card* to the next band rehearsal. Just craft your work at home either on the Guitar Workstation or in the included software (Pro Tracks Plus™ or Deck SE™). Then dump the files over to the Compact Flash card*. Now you can show the rest of the band how song-writing is really done.

If you want, you can even jam and get the practice session laid down using a single mic in the room or from a pair of line feeds from a mixer. Select MIC DRY for the mic path then set the CF/USB 1-2 SOURCE to MONO ALL OR STEREO ALL and have your spontaneous jams backed up for critiquing.



Eight Track Digital Recording at your feet!

How many times have you come up with a killer riff and then lost it? Not anymore. Just hit **RECORD** and capture it. With eight tracks at your disposal, you can add rhythm guitar, bass, vocals, and even acoustic performances. Over 6 hours of CD quality recording time is available with a single 2GB Compact Flash card[®].

Plav along with the included 100+ great MIDI drum patterns to help get those song ideas flowing. You can even "re-amp" dry recorded guitar takes back through the Guitar Workstation's™ arsenal of amp models and effects and make any take fit into the mix.

Creating Your Own MP3 Backing Tracks

You can now be your own one-man (or woman) band thanks to the Guitar Workstation's MP3 playback capabilities.

First, craft your songs at home minus the guitar tracks and turn them into MP3 files.

Next, put a whole gig's worth of MP3 backing tracks onto a single Compact Flash card[®].

These files will now appear at the end of the Guitar Workstation's factory drum patterns and can be instantly selected using the footswitches.





CREATE

RECORD

www.guitarworkstation.com

Eight Track Recording At Your Feet
Creating MP3 Backing Tracks
Drum Machine Custom Patterns



Creating Custom Drum Machine Patterns

Feel like you need a different drum part for your song idea? The Guitar Workstation's™ flexible Drum Machine lets you use your own MIDI drum patterns to play any of its 8 drum kits.

Just connect the Guitar Workstation to your computer via the USB port and use the included Pro Tracks Plus™ recording software to craft and play your own patterns using the Piano Roll view.

You can even save your new pattern as a type 1 MIDI file and take it with you on a Compact Flash card*.

*Compact Flash card not included





Multi-Track Computer

Automated Mixdown with the Guitar Workstation™

Your Guitar Workstation includes a powerful computer software suite for music creation. Pro Tracks Plus® is a professional recording application with the features you need to produce your song ideas from start to finish, including the Lexicon® Pantheon™ reverb plug-in.

When you're ready for mixdown, let Pro Tracks Plus' automated mixing functions turn the tedious work of mixing into an enjoyable part of finishing your project.



CREATE

RECORD

www.guitarworkstation.com

**Multi-Track Computer Recording Via USB
Mixdown & Automated Mixing**

Recording Via USB



At the heart of your recording studio, the Guitar Workstation™ serves both as your guitar processor and audio/MIDI interface. With microphone input, line inputs, and MIDI I/O, you have a full featured interface for recording almost any source you can think of.

Connect your guitar or bass to the Guitar Workstation's input and use the guitar and bass amp models for tracking these parts. Next, plug in the mic and get your vocal or acoustic performance nailed. You can even add line level instruments or feeds from submixes and record all of this completely hands-free.

Even your MIDI keyboard performance can be recorded so you can try the part with different synth voices later.

Since the Guitar Workstation has professional balanced outputs, you can plug directly into your favorite powered studio monitors and get the bonus of latency free monitoring to boot.



Untethered Recording

Ever had a moment where the band just clicked with a great song idea? Then you came back the next night to go over it again and... how did that go?

Never again, thanks to the Guitar Workstation's™ onboard recorder and its ability to remotely capture and store that idea forever on a Compact Flash card*. Just plug a mic into the Guitar Workstation's mic input, or if you have multiple mics and a mixer, use the stereo output of the mixer into the Guitar Workstation's line inputs.

Set the **CF/USB 1-2 SOURCE TO STEREO** and hit **RECORD**. Now you can ensure that spontaneous genius will never be lost again. The perfect creative solution.

Connect an optional **GNX-FC** for dedicated recorder functions while your Guitar Workstation footswitches can be used for changing presets and turning effects on and off.



Easily transfer files to and from a Compact Flash card* via USB. Plug a Compact Flash card* into the Guitar Workstation. The Guitar Workstation will write a directory structure for files it will use. A **GNX4** directory will be created along with four sub directories: **MIDI**, **PRESETS**, **SONGS**, and **MP3**.

For any **MIDI** drum pattern files

(***.MID**) you want the Guitar Workstation's **MIDI** drum machine to

play, put these in the **MIDI** directory. For any **MP3** backing tracks or lesson files you want to play, place these in the **MP3** directory. These files will be added after the user **MIDI** files in the **DRUMS/MP3** player **PATTERN** menu.

If you saved any presets onto a Compact Flash card*, you can archive the single presets file from the **PRESETS** directory onto your hard drive.

File Transfer for Post Editing



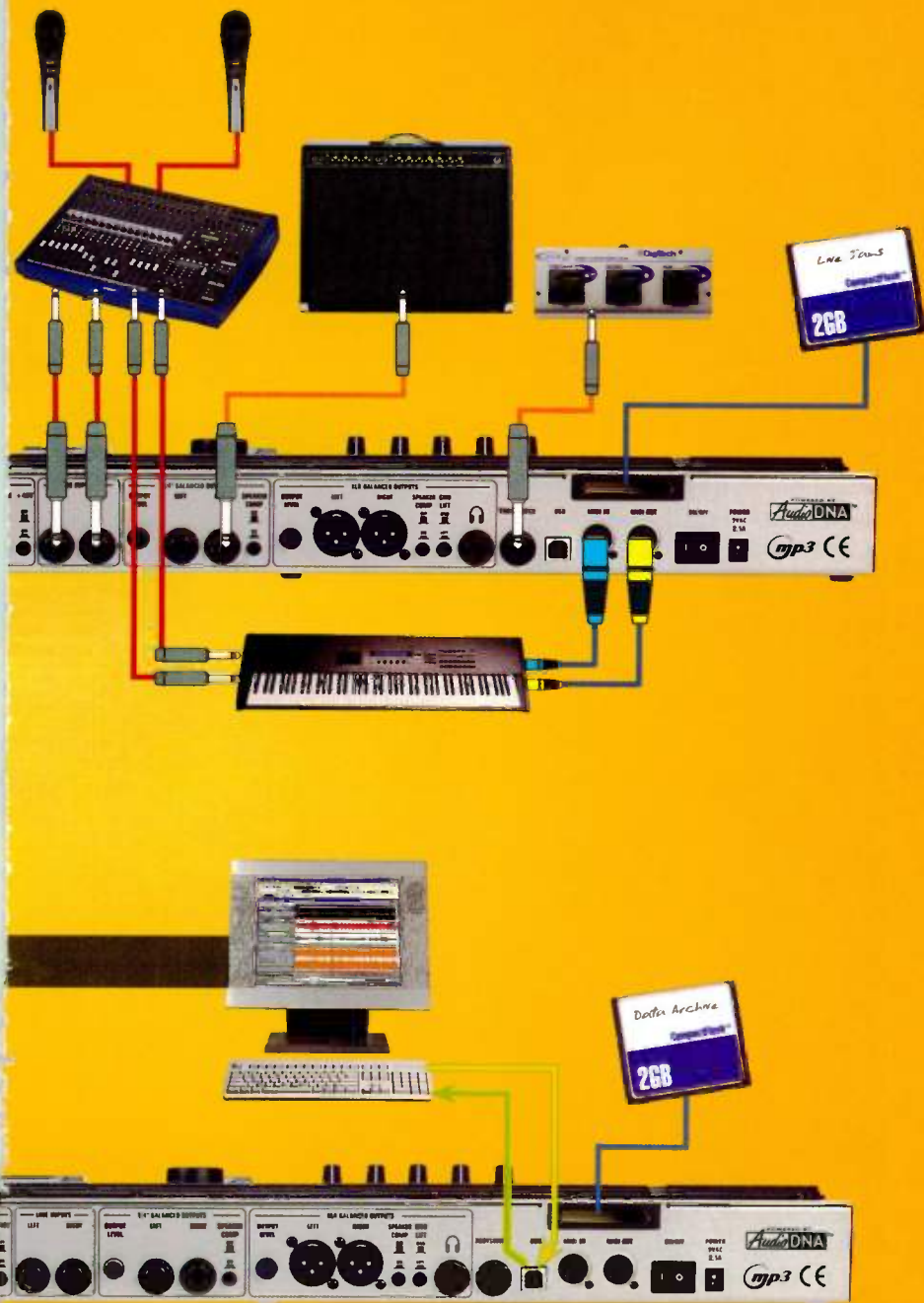
*Compact Flash card not included

CREATE

RECORD

www.guitarworkstation.com

Untethered Recording
File Transfer for Post Editing



- Built-in 8-track digital recorder (up to 99 songs and over 6 hours with optional 2 GB Compact Flash card*)
- 6 channels of 24-bit audio streaming via USB (record 4, playback 2) with zero latency monitoring
- Built-in general MIDI Drum machine
- MP3 Playback
- High quality dbx® mic preamp with true 48V Phantom Power
- Built-in 8-track Jam Man™ Looper
- 24-bit A/D/A converters
- 15 guitar and 10 bass amp models
- Distortion Stompbox Modeling
- Multi-modeling lets you create unlimited tones
- 80 User / 80 Factory Presets + save 80 more on a Compact Flash card *
- Optional GNX-FC foot controller adds dedicated control of recorder functions while the GNX4 footswitches can select presets or control stompboxes
- Balanced stereo line inputs
- XLR and 1/4" stereo outputs with Speaker Compensation

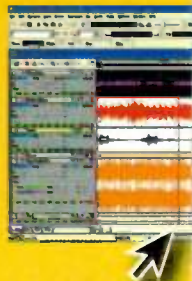
GUITAR WORKSTATION AMP AND CABINET MODELS

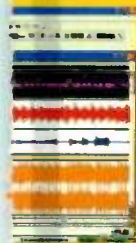
- Blackface ■ Boutique ■ Rectified ■ Hot Rod ■ Tweed ■ British Combo ■ High Gain ■ Modern Gain ■ HiWattage ■ Vintage 4x12 ■ Green 4x12 ■ British 4x12 ■ American 4x10 ■ American 2x12 ■ British 2x12 ■ Rock Bass ■ DualShow ■ Hartkey ■ Vintage 8x10 ■ Hartkey 4x10 ■ Acoustic Guitar Simulator ■ and more...



GUITAR WORKSTATION EFFECTS (up to 11 at a time)

- Programmable 4-band EQ (bass, mid, treble, presence)
- Delay: Analog ■ Spread
- Digital ■ Ping Pong ■ Reverb: Room ■ Hall ■ Club ■ Studio
- Plate ■ Church ■ Arena
- Spring ■ Detune ■ Pitch Shift ■ Chorus ■ Flanger ■ Phaser ■ Tremolo
- Vibrato ■ Rotary Speaker ■ Envelope Filter
- Silencer™ Gate ■ AutoSwell ■ Compressor
- Envelope Filter ■ Panner ■ Auto Ya™
- Wah: Cry Wah ■ Boutique Wah ■ Full Range Wah
- Whammy™: Whammy Octave Up ■ Whammy 2 Octaves Up ■ Whammy Octave Down ■ Whammy 2 Octaves Down
- Harmony Minor 3rd/Major 3rd Up
- Harmony 2nd/Major 3rd Up ■ Harmony 3rd/4th Up ■ Harmony Octave Up ■ Harmony Octave Down





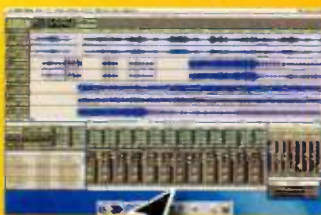
GUITAR WORKSTATION[™] INCLUDED SOFTWARE

Pro Tracks[™] Plus recording suite for PC. ■ 32 24-bit stereo tracks ■ Unlimited MIDI tracks & sequencer with event editing ■ Advanced realtime signal processing with DXi plug-in support ■ DXi soft synth included

■ Supports AIF, MP2, AU, ASF, MPG, WAV, SND and OMF. MP3 encoding (30-day trial)

BIAS[®] Deck[™] 3.5 SE for Mac[®].

■ 64 tracks ■ Up to 999 virtual tracks ■ Realtime signal processing with VST plug-in support ■ Non-destructive punch-in/out ■ Master fader with stereo effects bus ■ Supports AIFF, SDII, SAV, SND & Quicktime[™]



Lexicon[®] Pantheon[™] reverb plug-in for Mac and PC ■ 35 factory presets ■ 6 reverb types ■ 16 editable parameters per reverb type ■ 16/24-bit compatible

Cakewalk[®] Pyro Express[™] CD burning software for PC.



X-Edit[™] Editor/Librarian for Mac and PC.

PC System Requirements:

Windows[®] 2000/XP, 500 MHz processor speed (1.2 GHz recommended), 128 MB RAM (512MB recommended), 100 MB hard disk space for full install, EIDE/Ultra DMA 7200 RPM hard disk or better recommended.

Mac System Requirements: OS X version 10.2.8 or later, G4 processor (450MHz or faster), 128 MB RAM (512MB recommended), 20 MB hard disk space, 18 ms average seek time or faster hard disk. Quicktime 3.0 or later.



*Compact Flash card not included

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Guitar Workstation™



PERFORM ▶

PRACTICE ▶

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engineers in the Rock 'n' Roll underground of Salt Lake City
Phone 801.566.8800 ■ E-mail info@digitech.com

www.guitarworkstation.com

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Guitar Workstation™?

What happens when a bunch of fanatic, guitar-playing engineers combine a studio full of recording equipment and the world's most advanced modeling guitar processor into a single integrated package?

You get the ultimate guitar player's tool:

The Guitar Workstation™.

They engineered several thousand dollars worth of gear into a single floor unit. But they didn't stop there. Since when you're playing, you have your hands full, they also designed an intelligent, *hands-free* user interface to make it all work the way a guitar player thinks. It's there at your feet ready to record when inspiration strikes.

Not only is a Guitar Workstation™ a great tool in the studio, it can also follow you on stage and be your entire live rig as well.

Would you expect anything less from DigiTech®, the world's leader in guitar modeling processors?

Discover all the things you can do with a Guitar Workstation™ by e-mailing or calling for your free GNX4 APPLICATIONS GUIDE. But, if you've already seen enough, head on down to your local DigiTech® dealer and experience The Guitar Workstation™ for yourself.

GNX4 Guitar Workstation

- Built-in 8-Track Digital Recorder
- Built-in 24-bit USB Computer Audio/MIDI Interface
- Built-in General MIDI Drum Machine
- Built-in MP3 Player
- Built-in USB Compact Flash Card Reader
- Built-in 8 x 8 x 4 Mixer
- Built-in dbx® Mic Preamp w/48v Phantom Power
- Built-in Direct Box with Active Speaker Compensation
- Hands-free Recording
- 24-bit A/D/A Converters
- GeNetX™ Multi-Modeling Processing provides unlimited amp and cabinet models

Included Software:

- Multi-track recording/editing software: Pro Tracks™ Plus for PC and BIAS® Deck™ 3.5 SE for Macintosh®
- Lexicon® Pantheon™ Reverb Plug-in for the PC and Mac®
- Cakewalk™ Pyro Express CD burning software for the PC
- DigiTech® X-Edit™ Editor/Librarian

Multitrack Recording Software

Professional Mac®/PC recording and editing suite featuring Lexicon® reverb plug-in.



MP3 Player

Play along with your own backing tracks or practice with lesson downloads.

USB CF Reader

Built-in card reader for easy transfer of files to and from your computer.



Drum Machine

Over 100 rhythms and 8 different drum kits. Even play your own MIDI patterns.



Mic Preamp High quality dbx® mic pre with 48V phantom power accepts both dynamic and professional condenser mics.



Mixer Flexible mixing of your recorded projects and routing of all inputs and outputs.

John Frusciante's Creative Explosion

Solo album number three, *To Record Only Water for Ten Days* (Warner Brothers, 2001), was recorded at Frusciante's home on a digital 8-track. He made elaborate use of MIDI and sequencers on that album, and in terms of sonic, arrangement, and production qualities, it was a big step forward. In early 2004, Frusciante released *Shadows Collide with People* (Warner Brothers, 2004), his first big-production solo record. It was engineered in part by Red Hot Chili Peppers' engineer Jim Scott and recorded mainly at the prestigious Cello Studios in Los Angeles. The release dates of those four solo works would lead one to expect solo album number five to be released sometime in 2007 or 2008. Instead, Frusciante is scheduled to have released six additional albums by the end of January 2005.

PRODIGIOUS PRODUCTION

Frusciante recently finished an amazingly ambitious production schedule. He recorded one album per month in a period of extreme creativity from late 2003 through 2004. The results are now being released at an almost-monthly rate on the Record Collection label.

The first release (in June 2004) is

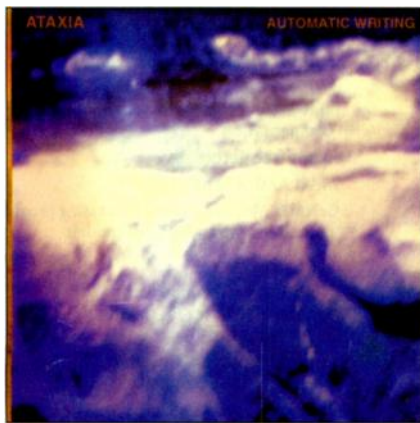


FIG. 1: Frusciante released *Automatic Writing* under the band name Ataxia. The CD also features Josh Klinghoffer and Fugazi bassist Joe Lally.

titled *The Will to Death*, a collection of songs played in the studio by Frusciante and his current musical partner, 22-year-old drummer and multi-instrumentalist Josh Klinghoffer. The next release, in August 2004, is an album under the band name Ataxia called *Automatic Writing* and features Frusciante, Klinghoffer, and bassist Joe Lally of Fugazi (see Fig. 1). *Automatic Writing* is full of circular bass riffs and Frusciante wailing on his guitar. That album was followed in September 2004 by a short solo album titled *DC EP* (see Fig. 2), which was recorded in Washington, DC, and features drummer Jerry Busher.

Frusciante's fourth release, *Inside of Emptiness*, was released in October 2004, followed a month later by *A Sphere in the Heart of Silence*, on which Klinghoffer is an equal collaborator. Frusciante will release *Curtains*, which he refers to as his "acoustic album," in late January 2005. In addition to those six releases, Frusciante also wrote the film score to the Vincent Gallo movie *The Brown Bunny*.

Six CDs in seven months sounds extreme, and some might worry that Frusciante has descended into another episode in which the emphasis is on the "mad" part of his oft-applied "mad-genius" moniker. But during the long conversation from which this article was culled, the guitarist came across as the embodiment of calm and composure.

When asked "what's driving you?" Frusciante laughed: "Well, at the moment, nothing. I'm in a completely different phase, having a break, and getting ready to record the next Chili Peppers record. These six records were recorded in a period of six months after coming home from touring with the Chili Peppers for one-and-a-half years. I made a list of all the songs I had and they totaled about 70. My objective was to record as many songs as I could during the break that I had. In the midst of doing that, I was writing some of my best songs, so some of these albums have as many new songs as old songs. It was definitely the most productive time of my life."

PERFECT IMPERFECTION

The speed at which Frusciante committed the songs to (analog) tape is



FIG. 2: The third of Frusciante's six-CD outburst, *DC EP* was recorded in Washington, DC, and features drummer Jerry Busher.

astonishing. But his career has always been one of extremes. His first two solo albums were recorded in a haphazard and chaotic fashion. When the spirit took him, he committed material to 4-track cassette tape without any demoing or preproduction—largely without production of any kind.

Then, as he worked on *To Record Only Water for Ten Days* and especially on *Shadows Collide with People* (as well as on the Red Hot Chili Peppers' *Californication*), he was bitten by the perfection bug. He explains on his Web site, "I was sick and tired of people dismissing my records as being f—d up and unprofessional." And so *Shadows Collide with People* was recorded at Cello, a top-of-the-line studio, with Scott, a top-of-the-line engineer.

But Frusciante now calls the *Shadows Collide with People* recording experience "frustrating." Although he doesn't disown the album, he speaks with more affection about the demos he made for it with Klinghoffer on a Tascam 488 mkII 8-track cassette recorder. (The demos are downloadable from Frusciante's Web site, www.johnfrusciante.com.)

On his Web site, the guitarist writes that after recording *Shadows Collide with People*, he began "noticing that albums I had loved my whole life had tons of things I would [at the time of recording *Shadows Collide with People*] have insisted on redoing. Slightly off-pitch vocals, instruments going slightly out of time with one another, as well as straight-up mistakes—all of these things prevail

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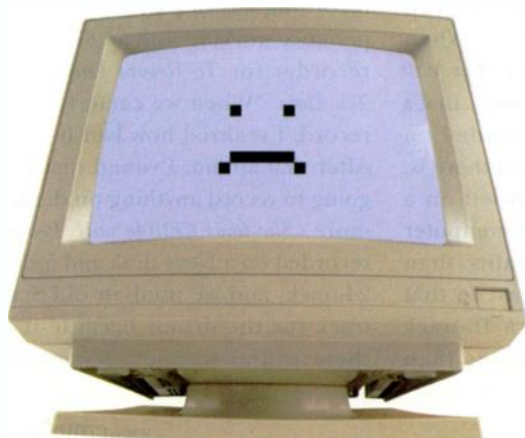
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John Frusciante's Creative Explosion

triumphantly on Velvet Underground, Talking Heads, Rolling Stones, Van Der Graaf Generator, Butthole Surfers, and countless other records—even The Beatles—that I have always loved. I realized that I had sharpened my sense of perfection to the point where, were they under my supervision, those records would have been cleaned up to the point of being inferior.”

Having come to his realization, Frusciante decided to radically change the way he was recording, mostly by working fast and leaving many of the mistakes. “This record is a celebration of flaws,” Frusciante enthuses on his Web site about *The Will to Death*.

LO-FI JUNK

Very little preproduction occurred for the 12 songs on *The Will to Death*. Frusciante demoed them in his living room in guitar-vocal fashion, which allowed Klinghoffer to prepare some drum parts and Frusciante to improve his singing.

“Hearing yourself sing is a big part of going into a studio and nailing it,” said Frusciante. They also recorded some simple guitar-vocal-drum versions in their rehearsal studio. “That was the closest we got to making demos,” he commented. “I may put them on the Internet. They sound like we were in outer space on a spaceship or something. We’d listen to them, and we’d think of overdubs. But we usually made up overdubs in the studio.”

Frusciante wasn’t focused on overdubs anyway, because he wanted *The Will to Death* to sound spacious and raw, getting away from the high-production values of *Shadows Collide with People*. Together with Ryan Hewitt—an up-and-coming engineer who had taken over from Jim Scott halfway through the recording of *Shadows Collide with People* and who went on to engineer most of Frusciante’s subsequent material—Frusciante recorded and mixed 12 songs in 5 days at 2 top Los Angeles studios, Mad Dog and Larrabee. Given that he garners a lot of his inspiration from recordings of the early 1970s, it’s not surprising that Frusciante recorded “as if it were 1971”—that is, on 16-track 2-inch tape, mixed down to ¼-inch, and without using computers.

“Many of those records were recorded in a day,” explains Frusciante. “We were taking our inspiration from groups who recorded quickly because they had to. My reasons for working quickly weren’t monetary, but it is an artistic challenge to do a record for a certain amount of money. I now make records for \$10,000, and by working so quickly I could record in the best studios. When people write about *The Will to Death* as being lo-fi, that’s bulls—t. It was recorded on the best equipment there is. It’s just not recorded on a f—g computer. A computer is not better quality than a 16-track, and just so that people know it, a 16-track 2-inch sounds better than

24-track 2-inch because each track has more space.

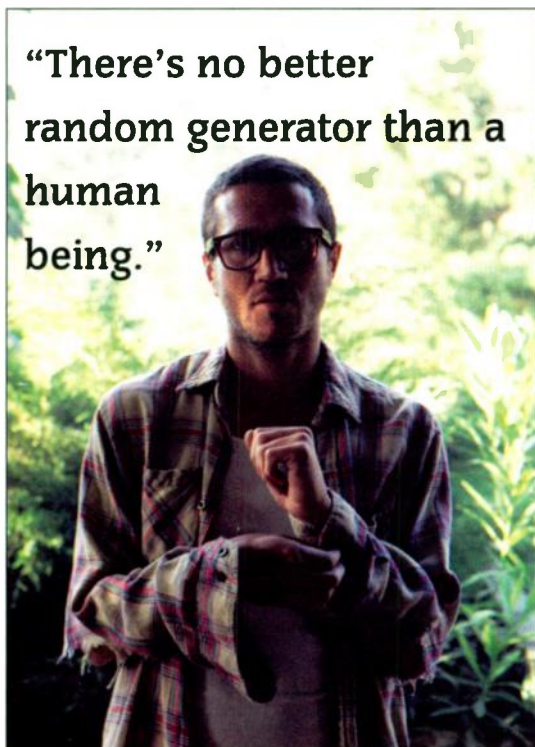
“You get a fatter sound with 16-track, which is why I use it. I’m not trying to record lo-fi, I’m trying to record quickly, because that’s the best way to capture excitement. As long as people can stand up to the pressure, music comes alive when they are creating it fast. If you can’t handle the pressure, then you give up or are forced to take longer. And after the experience of making *Shadows Collide with People*, Josh and I got used to top studios to the point where we weren’t intimidated by them anymore.”

MUSEUM OF ROCK

So what is Frusciante’s problem with computers? Not wanting to be seen as a Luddite, the guitarist offers the following caveat: “I won’t sit here and go on like some anticomputer person, because a lot of the music I really like is recorded on or generated with computers. I think many people are doing adventurous and wonderful things with computers.”

Frusciante continues to say that he far prefers analog recording “for the vibe that I feel my music should have, in terms of sonic warmth. I want my recordings to fill the room and be comforting, even if it’s a really distorted, loud, f---d-up sound. I’m probably one of the few people that go into a mastering place and insist that no computers are used. I want it to be analog all the way until it’s pressed into vinyl. For CD pressing, I ask for the music to be mastered to 1630 [U-Matic] tape, which sounds really good. The same EQ is applied for vinyl and CD mastering.”

Frusciante’s antipathy toward digital recording was in part fueled by his experience working with an 8-track digital recorder for *To Record Only Water for Ten Days*. “When we came to mix that record, I realized how bad it sounded. After that album, I vowed that I wasn’t going to record anything on digital anymore. *Shadows Collide with People* was recorded on a Neve desk and an analog 24-track, and we used an old Scully 8-track for the drums because it made them sound warmer. I wanted that



MIKE PISCITELLI

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"My friend Vincent Gallo opened my eyes to what you're losing when you record things digitally and the degree to which the older equipment is better than the new stuff. My home stereo is the greatest thing in the world. For instance, I have Western Electric speakers from 1949, and they're the best-sounding speakers I've ever heard, for any kind of music."

Clearly Frusciante has joined the company of some of the world's most eminent engineers and producers who believe that analog sounds better than digital, and that old equipment is often better than new gear. Like many of his fellow analog-lovers, Frusciante has taken to buying up the old studio gear that's on the market as digital workstations become the norm and established studios close. As a result, the guitarist's modest residence in the Hollywood Hills now looks a little like a museum of rock recording.

"I have an API desk from 1972 that's from The Record Plant," Frusciante reveals. "It's the board that Television and Kiss recorded on, and I think even John Lennon worked with it. I also have a 1-inch Ampex 8-track recorder from 1970, on which King Crimson recorded *In the Court of the Crimson King*. And I have six old 1176 compressors, a Fairchild, three Lang equalizers [a PEQ4 and two PEQ2s], two Pultec [EQP-1A3] equalizers, an EMT plate reverb, and an EMT 250 digital reverb. I also have a Studer A800 24-track recorder, but it's not here because my house isn't big enough to hold it. I'm trying to find a place, separate from my house, for a studio."

Frusciante suddenly stops in his tracks and exclaims worriedly, "I'm nervous talking about this stuff. I've never spoken about this to a magazine before."

While more details about the contents of his new home studio aren't forth-

coming, he does explain the reasons for starting his own studio. "It's really good to have the equipment that I love working on in my own place. Also, for the amount of money that I spent on *Shadows Collide with People*, I could have bought lots of studio equipment and had it forever. And I love the idea of being able to create music all the time without having to book studio time. A lot of the time the best studios in town are already booked, while in other cases, studios you like may close."

OLD STUFF

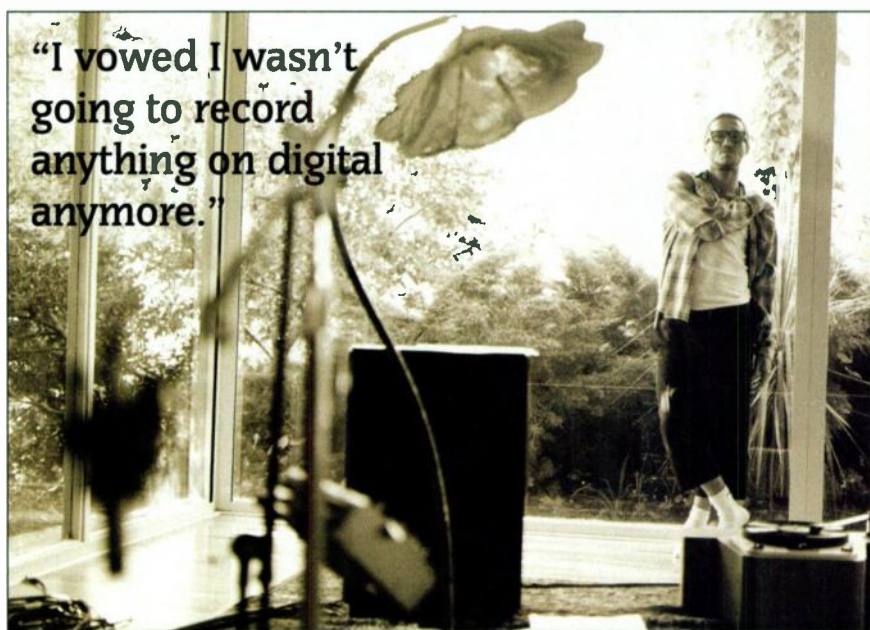
Frusciante proudly states that his latest CD, *Curtains*, was recorded at his home. "We used the Ampex 8-track. That album sounds so good. We usually seemed to have enough tracks for the instruments that we played, which were mostly acoustic guitar, upright bass, and drums. We used only one or two microphones to record the drums. I've never had such a good vocal and acoustic guitar sound as I do on that album. We bounced tracks where necessary—for instance, with the backing vocals. We'd do three tracks of harmonies, bounce them to one track, do the same again, put one of the two resulting tracks on the right and the other on the left, have a lead vocal in the middle, and another harmony in the middle behind the lead vocal."

Most would find this restriction to left, right, and center too limiting and would prefer to pan the seven or so backing vocals in a wide spread. But sharp panning is another one of the techniques from the 1960s that Frusciante believes was ahead of its time. *The Will to Death* is especially full of extreme panning. "In the 1960s, when stereo was first introduced, they didn't have pan pots—just left, right, and center.

"When I made *The Will to Death* I didn't know that, but I did notice that I loved the way, for instance, Peter Hammill's voice is completely in one speaker on his song 'The Birds' from his album *Fool's Mate* [Charisma/Buddah, 1971]. That one vocal in one speaker sounds bigger than any of the other vocals on the record, it sounds like a mouth 5-feet high. When you put information on two speakers you're compromising it, because two speakers are never exactly the same. There will always be the slightest difference and there'll be some phasing. When you have information coming from only one speaker, it's not compromised at all. It's there in its pure form and has a great deal of presence."

SYNTH MAVEN

Although he is known as a guitar player, Frusciante is also an enthusiastic synthesizer user. Not surprisingly, his synths



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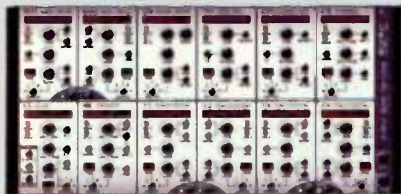
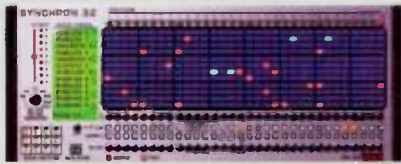
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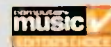
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John Frusciante's Creative Explosion

mainly date from the late '60s to early '70s. His collection includes a Doepfer A100 modular synthesizer, a Mellotron, a Minimoog, and a 1970 ARP 2500. "For a long time I was using mainly the Doepfer. I was more interested in using the LFO and gates and treating other instruments with it. I wasn't interested in using a synthesizer's oscillators. But the ARP 2500 has renewed my interest in oscillators completely, because they sound incredible. It's the

same thing with guitars and recording equipment—the old stuff sounds better, louder, warmer, and more soothing.

"On *The Will to Death* I used mainly the Doepfer. I didn't use the oscillators at all. I used a Minimoog for a couple of things. It was important for me not to use synthesizers too much on that album, because I was thinking more in terms of how miraculous the sound of a drum set or a guitar can be. It was more important for me to capture those sonic things that in a lot of ways are simple—for instance, the way you hear the drums dancing around the room and the way that a vocal sounds really late at night in a dark room. Those are the things that keep me interested in wanting to listen to music repeatedly."

Although there are some interesting synthesizer applications on *The Will to Death* (see the sidebar "Frusciante's Production Notes"), Frusciante's interest in electronic sounds is most striking on *Shadows Collide with People*, which has a number of instrumental synthesizer tracks that have obscure names such as "- 00 Ghost 27" and "Failure 33 Object."

"Because Josh and I had done elaborate demos for that album, when we were in the studio it was largely a matter of connecting the dots and getting similar sounds as on the demos," explains Frusciante. Sometimes we'd sit for half an hour trying to re-create a synthesizer sound that we had two years ago. We ended up taking breaks during recording to quickly record these instrumental

FRUSCIANTE'S PRODUCTION NOTES

The following are Frusciante's comments regarding the production of selected tracks from two of his solo CDs (see Fig. A and Fig. B).

Shadows Collide with People

"Carvel." "The opening section of that track was made by messing around with the Doepfer A100 and creating what sounds like electronic cueing. I put the Minimoog through an echo and played the melody that you hear on that."

"- 00 Ghost 27." "I'd been listening to an experimental electronic album at my house. I can't remember what it was, but two seconds of it stirred my mind. It sounded like a Mellotron choir through



FIG. A: *Shadows Collide with People*

a really distorted, screaming, feedback synth. I went into the studio the next day to try to re-create what I thought I had heard. I had a Mellotron choir sound on an E-mu module, and I put it through the Doepfer. You take an audio signal and use it to control a filter and dial knobs in a way that creates screaming feedback. It was one of those moments when music descends upon you."

"Regret." "I put my voice through the Minimoog on this song. That's an LFO controlling a filter on the Minimoog. Our normal way of doing things is if I'm treating myself, I'll usually record the vocal, do a send from the board, treat it, and then send it back onto tape."

"Omission." "I put Josh's voice through a VCA and had the LFO opening and closing that VCA really fast on the Doepfer."

The Will to Death

"A Doubt." "That really distorted guitar that comes in at the end has been put through the Doepfer. That's the best fuzz tone I've ever had. It's so dirty and f---d-up sounding, and it's from playing the guitar through a synthesizer."

"An Exercise." "The bubbling, feedback-like, squelchy sound at the end is an example of the ways you can generate feedback by running the audio out of a



FIG. B: *The Will to Death*

filter on the Doepfer and then back into the same filter. You get feedback, and you can control it with the knobs to get it just right. It's one of my favorite sounds."

"Loss." "Josh plays organ at the end, which is going through my Doepfer, making it sound like feedback. It's like the organ has whammy bar and is going through a Marshall stack. We often do this: he'll play an instrument and I'll treat it with a synthesizer simultaneously."

"A Loop." "The snare drum is going through the Doepfer, and there are also some backward guitars. We just turned the 2-inch tape over, and I soloed over the track two or three times. Then we turned the tape back again, and I soloed over that."

electronic compositions that we created right then and there."

Despite his preference for vintage modular synthesizers, Frusciante is not averse to samples and more modern synths. Frusciante extensively used his Clavia Nord Lead 2, a Casio SK-1, and the Akai MPC3000 on the album *To Record Only Water for Ten Days*. Other electronic instruments used during Frusciante's recent recording spree include a Chamberlain, a Moog Voyager, an Arp String Ensemble, a Korg MS10, and a late-1970s Synare analog drum synthesizer.

Although Frusciante recently acquired a genuine Mellotron, sampling,



**"My home stereo is
the greatest thing in
the world."**

modern synthesis, and programming are clearly not where his heart lies. "There are people doing interesting things with programming, like Aphex Twin, Autechre, and Squarepusher," he observes. "They use things that sound like flaws to me. I have no interest in programming that strives for perfection. Also, an interesting patch doesn't make music interesting. That's not music. Music is a variety of sounds all happening together. And there's no better random generator than a human being, with all those little inconsistencies, faults, and random things that happen in your voice and fingers. Those are the things that give personality, character, and vibrancy to music, which makes you want to listen to certain records over and over again."

Perhaps Frusciante isn't so extreme after all.

Paul Tingon is a writer and musician living in Scotland. He is the author of Miles Beyond, The Electric Explorations of Miles Davis, 1967-1991, a book on early weird funk experimentation. For more information, visit www.tingon.co.uk.

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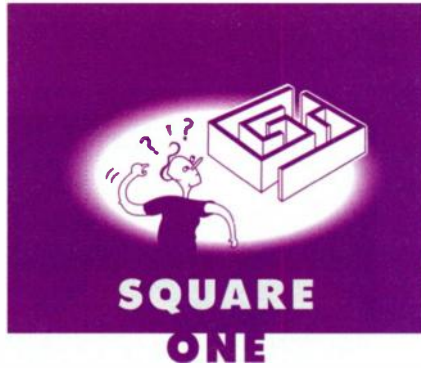
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Standing Tall

Standing waves are the key to your instrument's sound.

By Mark Ballora

Ever wonder what a guitar string and a microwave oven have in common? Both work with periodic, repeating waves. Tickle them with the right frequencies, and one will make beautiful music while the other heats up last night's leftovers. But tickle them at the wrong frequencies, and they do little or nothing.

Why are they so finicky? Well, they can't help it—they're built that way. Guitar strings, microwaves, and many other

devices and instruments are subject to special properties of standing waves and resonance. In this column, I'll take a brief look into the secrets of the timbral universe—the key to sounds and the underlying vibrations of life. I'll provide a few tips on how to improve the sound in your recording studio and give you an idea of how your instrument's vibrations interact with the natural vibrations in different venues.

STANDING WAVES

Imagine two people holding a jump rope. First, they each shake their respective ends, producing pulses that move along the rope to the opposite end and reflect back. They start by shaking randomly, and the jump rope looks disordered. But pretty soon they sync up into a regular pattern, producing pulses at a rate (or frequency) such that their pulses meet at just the right times to piggyback onto each other. At this point, the rope's motion appears simple and repeating. Pulses do not appear to move forward or backward; rather, certain points along the rope (called *nodes*) remain motionless, while halfway between the nodes are big bouncing points (called *antinodes*), as shown in Fig. 1. These piggyback waveforms, with their nodes and antinodes, are called *standing waves*.

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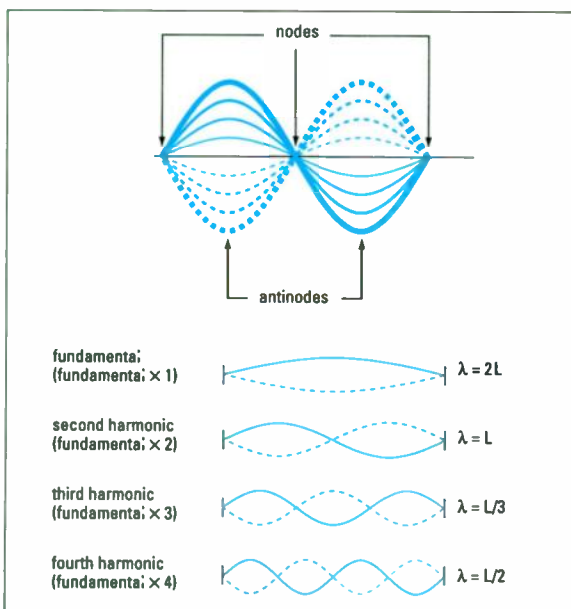


FIG. 1: A standing wave in a string produces stationary points called nodes. Between the nodes are points of maximum displacement called antinodes. The fundamental standing-wave frequency has a wavelength (λ) that is twice the length of the string. The string can also support integer multiples of that frequency.

The two people holding the jump rope can produce a variety of standing-wave patterns. Fig. 1 shows standing waves at four different frequencies. Usually, people turning a jump rope use a frequency like the standing wave pictured at the top of Fig. 1, with one loop up or down at any given time. But if the people shake the rope twice as fast, three times as fast, and four times as fast, they can make the rope look like the other patterns shown in Fig. 1. The top wave is vibrating at the lowest frequency that the jump rope can support. That frequency is called the *fundamental*. (Frequencies are expressed in cycles per second, or hertz.) The rope, like a guitar string, can also produce frequencies that are at integer multiples (for example, 2 \times , 3 \times , and 4 \times) of the fundamental frequency. Frequencies of this type are called *harmonic frequencies* or simply *harmonics*. What do all of the harmonics have in common? They all have nodes at the rope's end points.

Another characteristic of a standing wave that is worth considering is its wavelength. The wavelength is the distance between the beginning of the upward and the end of the downward

parts of the wave cycle. It is expressed in feet or meters per second for sound and is commonly symbolized with the Greek letter lambda (λ). In Fig. 1, you can see that the fundamental has a wavelength twice as long as the rope, since only half of the cycle—the upswing or downswing—is visible at any moment. The second harmonic has a wavelength that is the full length of the rope—that is, half that of the fundamental. The third harmonic has a wavelength of one-third the fundamental, and so on.

Wavelength is the inverse of frequency. Longer wavelengths correspond to lower frequencies, and shorter wavelengths correspond to higher frequencies. The second harmonic's frequency is twice that of the fundamental, and its wavelength is one half that of the fundamental. The third harmonic has

a frequency of three times the fundamental and a wavelength of one-third the fundamental, and so on.

Standing waves are at the heart of music because harmonic frequencies are the only stable vibrating modes for any object. But real objects are a little more complicated than the jump rope, and their vibrations are usually a composite of a number of standing waves. To understand why, I'll discuss resonance in the following section.

RESONANCE

Press the damper pedal of a grand piano and hit a low note a few times. If you listen carefully, you'll notice that in addition to the strings of the note you played, a number of other strings also vibrate (though at much lower amplitude). These extra strings share harmonics with the original note. Air vibrating around the strings at a rate that matches their characteristic frequencies pushes them back and forth. This phenomenon is known as *resonance*, or *sympathetic vibration*.

The tendency of an object to resonate at characteristic frequencies explains why natural sounds are nearly always combinations of different frequencies. When you pluck a string on your guitar, initially that

ROOM À LA MODES

Wavelength and frequency are intimately connected: if you know one, you can figure out the other. Given a certain wavelength (λ), the corresponding frequency (f) is the speed of sound ($c \approx 1,000$ feet per second, with slight variations depending on altitude and temperature) divided by the wavelength:

$$f = c / _$$

Given a certain frequency, the wavelength is the speed of sound divided by frequency:

$$_ = c / f$$

In a room, the wavelength of the fundamental room mode is twice the room's length (L). The room will therefore have natural resonances at integer multiples (n) of the fundamental frequency:

$$[\text{room modes}] = nc/2L$$

For example, a room with walls that are 10 feet apart may support standing waves at harmonics of:

$$nc/2L = n1000/20 = n50 \text{ Hz}$$

But frequencies that are halfway between the harmonics of 50 Hz (for example, 75 Hz, 125 Hz, and 175 Hz) are cancelled. In worst-case conditions, the room's frequency response has a regular series of peaks and dips. The comb shape of that response curve gives the effect the name *comb filtering* (see Fig. A).

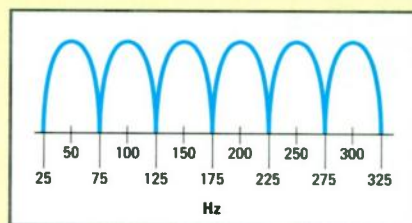


FIG. A: Reflective surfaces in a room can lead to a regular series of waves that either reinforce or cancel each other.

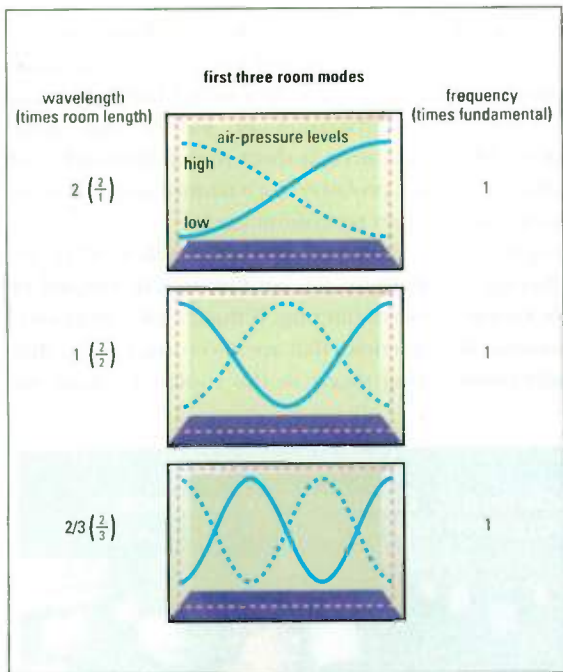


FIG. 2: Rooms, like strings, are able to support standing waves at harmonic frequencies of the fundamental. As with strings, the fundamental frequency has a wavelength that is twice the length of the room.

pluck creates chaos in the string. But within an instant, most of the chaotic vibrations traveling between the ends have cancelled each other out. All that "survives" is a combination of the string's characteristic frequencies, although the predominant pitch you hear is the string's fundamental frequency. The string's vibrations are passed on to the body of the instrument, which also vibrates in sympathy, causing a greater displacement of air around and within the instrument. The body, with its resonances, determines the timbre (or tone color) of the instrument's sound.

The frequencies that an instrument produces are called *partials* (each is part of the composite vibration).

Partials are generally some integer multiple of the fundamental, and therefore are known as harmonic partials. (The fundamental itself is the first partial.) But some instruments, notably bells and pitched percussion, have partials that are not integer multiples of the fundamental. Instead, they are at strange multiples such as 1.4 or 2.73. Those frequencies are inharmonic partials. The term *overtone* is used as the name for all of the partials above the fundamental.

ROOM WITH A REFLECTION

Recurring (or periodic) changes in air pressure that occur in enclosed spaces are also standing waves. Showers can be a great place to test that because they are typically small and have parallel walls and highly reflective tiled surfaces, which are perfect conditions for standing waves. Try this experiment: imitate your favorite singer and create a low tone. Slide your pitch slowly upward, and notice that some notes "ring" out, while others fade. You can also

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● SQUARE ONE

try to play a 1 kHz sine wave with your software synth, and put the speaker on the floor facing a wall. Move the speaker about six inches from the wall, get the spot just right, and listen to the level suddenly drop. What's going on here?

Air molecules that vibrate within a room bounce off the walls. When they do, there is a moment of high pressure (high density) as they bunch together before they ricochet away, momentarily spread out, and create lower pressure (low density). Because of these oscillations in pressure at the walls, the room has a set of characteristic (harmonic) frequencies just as a guitar string does (see Fig. 2). The fundamental is the frequency that has a wavelength of twice the room's length, with pressure antinodes at the walls (where the pressure is alternately very high and then very low, with the levels at the two walls always exactly opposite) and a node in the center (where the pressure is most consistent, at near-zero change). Integer multiples of that frequency also resonate. Acousticians call those characteristic frequencies *room modes*. (Characteristic frequencies are also what happen in your microwave, but those are a different type of wave.)

If the room is a perfect cube, the same resonances may be amplified in all three directions—floor to ceiling, side to side, and front to back. Similar resonance sharing can occur if the room dimensions are integer multiples of each other. If a room is twice as long as it is high, the floor-ceiling harmonics can also resonate on the front-to-back axis of the room.

GOOD VIBRATIONS?

A room naturally resonates at some frequencies. Is that a good thing? The equivocal answer is maybe. Room acoustics is a complicated business, even for the pros. You want your recording or performance space to be neutral, allowing all frequencies to sound equally and clearly. Ideally, your recording space has no parallel walls and is built of materials that absorb enough of the sound so there isn't excessive reverberation. The materials should also reflect enough sound so that the room doesn't sound dead. That is an ideal situation, but in reality, people usually inherit a recording space—such as a former garage, attic, practice room, ware-

house, or barn—that was never intended for recording. Chances are you'll need to take some measures to improve its sound. Entire books have been written on how to do that; however, I'll discuss some initial steps that you can take. For small spaces, ensure that you don't get coloration from standing waves, which can show up in two guises: flutter echo and comb filtering.

Flutter echo refers to echoes bouncing back and forth between surfaces. If you stood in a completely empty room

(bare walls, bare floor, and bare ceiling) and you clapped your hands or snapped your fingers, you would hear a buzzing "reverberation tail." Flutter echo can be produced by short, impulsive sounds, and it's probably not a feature you'd want on every percussion track.

Sustained tones or chords won't create flutter echo, but they may be colored by comb filtering. If the chord contains frequencies that are also room modes, they ring nicely in the room—perhaps too



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nicely. Other frequencies are reflected out of phase with themselves and are largely cancelled (for more on phase, see the Square One column "About Phase" in the May 2004 issue of EM). The room may have an overall frequency response with a regular series of peaks and nulls, as shown in Fig. A. Instructions for estimating your studio's room modes can be found in the sidebar "Room à la Modes."

If you play and hold a chord in a room, it can actually sound different as you walk around, passing through various nodes and antinodes. For high frequencies (which have short wavelengths), you may be able to hear the differences simply by tilting your head back and forth. A cello being played in a corner can produce low-end resonances. Moving the cello player toward the center of the room and out of the antinode can yield a more even frequency response. Similarly, a microphone can pick up different-sounding results depending on whether it's placed in a

nodal or antinodal region (different microphones respond differently in different spaces).

Depending on how your recording room sounds, you may want to absorb or diffuse standing-wave frequencies. If your room tends to ring or rumble, you may want to absorb some of that extra sound. Strategically placed materials, such as drapes or carpets, can soak up high frequencies, while surfaces such as plywood or glass are better for absorbing lower frequencies.

Keep in mind that absorbing too much can muffle everything. You may be better off trying to diffuse the sound—that is, scattering the reflections so they don't bounce right back on top of each other and form standing waves. Sometimes a low-end solution is as simple as putting bookcases against the wall or adding extra furniture to the room. But you have more flexibility with acoustic diffusers, which include foam that has regular slits cut into it to scatter high frequencies or bass traps that

are placed in corners to break up the low tones. You can also purchase an AcoustiKit from Acoustics First (www.acousticsfirst.com/), which is a modular set of diffusers of various shapes and sizes.

THE SCOPE OF IT ALL

We've only been able to scratch the surface here, so for more on the behavior of standing wave behaviors, check out Zona's Standing Wave page <http://id.mind.net/~zona/mstm/physics/waves/standingWaves/standingWaves.html> or the University of Colorado at Boulder's Physics Dept. page: www.colorado.edu/physics/2000/microwaves/standing_wave1.html. You'll see that resonance is at the heart of so many things, and once you get the concepts, you'll be astounded at the things you'll notice resonating all around you.

Mark Ballora is assistant professor of music technology at Penn State. Resonance is one of his favorite teaching topics.

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Add It Up

Get a handle on the basic costs before you prepare to release your CD.

By David Phillips

You've recorded and mixed your songs to perfection. As the saying goes, they are "in the can" and are ready for public consumption. With a little ambition and a crafty do-it-yourself attitude, you can release a disc on a modest budget. Releasing your music yourself allows you to maximize profits by eliminating the overhead that a major label brings to a project. The competition to get signed

is fierce, which makes it less likely that your music will ever get released or see a large audience. Using today's technology, you can make a product that rivals major-label releases for a fraction of the cost with a much lower break-even point, allowing you to start enjoying profits sooner. But before you consider releasing your album yourself, you need to have a clear picture of how much money it takes to get your CD into the hands of buyers.



SETTING UP SHOP

If you haven't set yourself up as a legitimate and legal business already, it is a good idea to do it in preparation of a release. You'll need to look into getting a business license and a reseller's license. The following fees are based on my home of Portland, Maine; your city and state fees may vary. A Business License from the City of Portland costs \$20. The State of Maine issues Reseller's Permits for free. Reseller permits allow you to sell to record stores and distributors within your state and not charge them sales tax. Finally, you'll need a tax ID number, which the IRS will issue for free. Also, you may need to file a Fictitious Business Name Statement or dba (doing business as), which will cost you whatever your

COURTESY OF DISC MAKERS



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Chuck Henry – TAXI Member

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Lots of them!

So many people think that TAXI is just a songwriter organization, but it's actually much, much more. They help artists get deals, songwriters get cuts, and film, TV, and commercial work for writers and artists in just about every genre of music.

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Are you making great music? Do you have the connections to get it to the right people, or is it collecting dust on a shelf?

I wasn't making many solid contacts either. Then I joined TAXI, and my life literally began to change. I've made phenomenal connections, and landed just about every kind of deal imaginable. The most important part is that I'm making money doing what I love doing most – making music.



I don't know why every musician on the planet hasn't joined TAXI yet. It's exactly what you've been waiting for, and it's been sitting right under your nose since 1992!

Does TAXI sound too good to be true? Let me be the first to tell you that it's everything they claim it is – and a lot more. I even used TAXI's feedback to help me get the songs for my CD whipped into shape.

It's like having your own team of experts and collaborators at your disposal for less than a dollar a day. You probably spend more than that on designer coffee.

Maybe it's time you invested in your music. Maybe it's time to invest in *yourself*.

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FIG. 1: Most disc manufacturers offer a wide variety of options to independent musicians, including discs in bulk that you can package yourself, discs in simple printed cardboard cases, or discs in jewel cases with multipage color booklets. Shown above is a CD with imprinted design, jewel case, and booklet from Disc Makers.

local newspaper charges for classified ads. State and county laws and fees do vary considerably, so check with your local agencies. BusinessNameUSA is an online resource for purchasing business and reseller licenses as well as filing for your tax ID number and dba (www.businessnameusa.com). To read up on the legalities and details of setting up your own business, check out "Working Musician: Going Legit" in the February 2002 issue of EM.

Acquiring a business checking account allows you to easily keep track of your expenses. Get an account that has a debit card, which makes purchasing goods and services easy and swift. Make sure that you save all of your receipts and print out records for online expenses. Many credit unions and banks have free checking accounts, even for businesses, so take the time to shop around. (For more on book-keeping, see "Working Musician: Hit the Books" in the January 2004 issue of EM.)

When it comes to organizing your project, a simple file box and folders, available at most office supply stores for \$10 to \$30, should suffice. Good accounting software is worth its weight in gold. Intuit Quicken and Microsoft Money are two examples of financial software that should serve you well.

Prices for accounting software generally run from \$30 for a basic model to \$90 for deluxe small-business versions. Take advantage of these accounting tools. The task of documenting finances will be much easier for you and your accountant. Saving your accountant time could also save you money when it's time to do your taxes. Regarding taxes, many of the expenses involved in releasing your CD may be tax deductible, which is another reason to stay organized and keep good records (see "Working Musician: Tax Tips for Musicians" in the March 2003 issue of EM).

PREPARING YOUR SONGS

It is important for your songs to have a coherent sound (technically, not stylistically) from one song to the next. If you complete a group of songs over time, then they may have subtle differences in sound quality that become more obvious when you listen to them back to back.

If you have a great ear and the proper tools, you can create a more uniform and professional-sounding release by tweaking the songs yourself at little or no cost. If you feel that mastering is best left to a professional, which is what the pros and smart indie artists do, you should hire one. Most good studios

employ engineers who have an ear for mastering. At about \$50 per hour and one hour per song, a full-length professionally mastered disc should cost only \$500 to \$600.

DESIGNATED DESIGNER

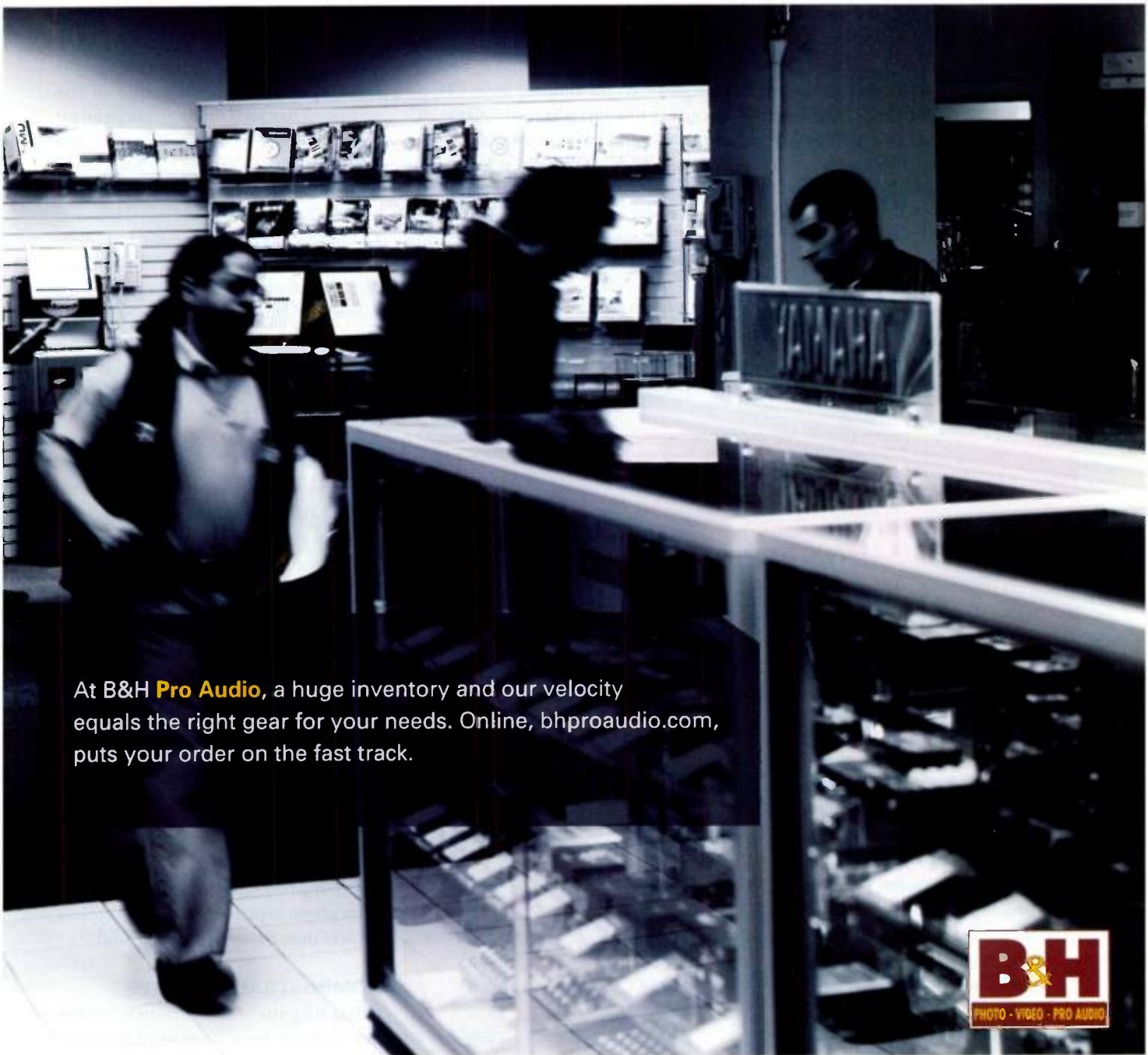
You may be a great lyricist, but writing effective copy for a disc sleeve, a bio, a press release, or an advertisement is another story. If you're not good at writing effective copy, then it is in your best interest to get someone with experience to create good copy for your release. Expect to spend between \$100 and \$200 per page for that service. Depending on the amount of material you need, you could spend up to \$400. Anything more than that may be overkill for an artist doing an independent release. If you pay anything less than \$100, you are probably selling yourself short, unless you are a friend of the writer and are getting special pricing.

If you are going to have pictures of yourself on the disc, then good photography is the most important aspect of your design. Pictures stand out and are worth getting done professionally. You should be able to hire a good photographer for a half day for about \$400. If you have a plan and are well prepared for the shoot, you will make it easy for the photographer, thus saving time and money.

Next, you'll need to combine your text and images and layout the design of your release. A good graphic designer can take your materials and create a package that is greater than the sum of its parts. You may be able to call on talented friends to help, or you could solicit the services of disc manufacturers, who often have staff designers with an appreciation for music products. If you go with a manufacturer that offers this service, you can expect pay about \$100 per page for package design.

Remember, presentation is key. It is unlikely that you are a great songwriter, instrumentalist, engineer, copywriter, photographer, and graphic designer. At best, you may have friends and family that can help out with a variety of tasks

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and assist you in putting out a sharp-looking release on a limited budget.

MANUFACTURING

Fortunately for independent musicians, the price for manufacturing CDs has consistently dropped since the format became the music-delivery standard in the early 1980s. For budgeting purposes, figure that you can get a basic 1,000 retail-ready disc package with four-page inserts that are professionally printed and replicated for \$1,200 to \$1,500 (see Fig. 1). Duplication, rather than replication, isn't recommended because not all CD and DVD players will play duplicated discs.

You should consider having a UPC bar code to record sales to SoundScan and to make it easier for retailers that scan items at the register. The Uniform Code Council (www.uc-council.org) issues UPC bar codes to businesses for

\$750. There are also online companies that distribute bar codes for a fraction of what it costs to get one from the UCC. As an alternative, your manufacturer may supply a bar code for free, or you may purchase one from an online CD distributor, which I'll cover shortly.

DISTRIBUTION DETAILS

After your design is complete and before you start distributing your CD, it's necessary to copyright your release. It's affordable and more of an effort rather than an expense. You can register your sound recording as a whole by submitting a Form SR to the United States Library of Congress for \$30. Registering the entire work at once spares you the \$30-per-song charge of registering them all separately. Furthermore, to register a work as a sound recording, the copyright office requires an actual printed and pressed disc from the manufac-

tured lot. (You can learn more about copyrights and download and print forms by visiting www.copyright.gov.)

Most retail stores will distribute your release on a consignment basis. The good news is that this costs you nothing up front. The bad news is that you have to wait until you actually sell discs to get your money. For a \$35 setup charge, you can sell your release online through CD Baby (www.cdbaby.com), one of the most popular Web sites for independent artists to sell their works. The artist sets the price of the CD, and CD Baby keeps \$4 per disc sold. If you don't get a UPC bar code from your disc manufacturer, CD Baby can get you one for \$20. Amazon's Advantage program (www.amazon.com/advantage) is another option for selling your music through a third-party site. You must apply and be accepted into the program. There are no up-front fees, but Amazon pays you 45 percent of your CD's retail price.

PRESS KITS

Thanks to desktop computing, you can print many of your own materials. Most computers come with basic publishing software that usually has predesigned templates for a variety of documents. You or a friend can design pretty nifty bios, press releases, flyer sheets, and envelopes. For the price of an ink cartridge (\$35) and some nice paper and matching large envelopes (\$45 to \$65), you can make a nice-looking press kit on-demand from the comfort of your home. Stay away from plain white paper and envelopes; you can do much better by spending a little more money.

You'll need publicity photos to round out your press kit. You can get 250 publicity photo reprints from your original for less than \$100, so shop around.

ADMINISTRATIVE COSTS

Often forgotten and seriously underrated are the basic costs of phone calls and postage. For long-distance calling, I've found that prepaid calling cards have the best rates. You can get 600 minutes for about \$22. Six hundred minutes should be sufficient for the phone calls that you'll inevitably make in anticipation of a release.

The Cost of Doing Business

When releasing your own CD, every penny counts. While working out your budget, you should take a good look at the various costs side by side so you can decide where it might be worth spending more and where you can cut back. For example, the scope of your release will determine how much you spend on CD pressing and advertising. Or, if you already have a Web site and can update it yourself, you can cut that cost out of your budget. Also bear in mind that the costs listed here are for releasing a CD. Depending on your sales goals and how much of your income is dependent upon your music, you may need to factor in the recurring costs of running a music-related business such as accountant fees, business cards, promotional items, insurance, and so on.

Incurring Cost	Low End	High End
Fictitious Business Name Statement	\$25	\$50
Business License	\$20	\$200
Reseller's Permit	\$0	\$200
Office Supplies	\$10	\$30
Accounting Software	\$30	\$90
Mastering	\$0	\$600
Copywriting	\$100	\$400
Photography	\$350	\$500
Graphic Design for Disc	\$0	\$400
CD Manufacturing	\$1,200	\$1,500
UPC Code	\$0	\$750
Copyrighting Sound Recording	\$30	\$30
Press Kit Supplies	\$180	\$200
Phone and Postage	\$175	\$200
Web Site	\$0	\$1,000
Advertising	\$300	\$1,200
Total:	\$2,420	\$7,350



• WORKING MUSICIAN

A basic press kit—press release, bio, photo and CD—will cost \$1.52 each to mail. Sending out 100 press kits to key publications, radio stations, and venues should be enough to get the ball rolling.

PROMOTION AND MARKETING

If you don't want to have a million discs sitting in your cellar, then promotion is a key part of your release, perhaps the most important part. Major labels are essentially marketing and promotion companies that spend a significant amount of money promoting artists. Sales are directly related to marketing, and as an independent artist, it is imperative that promotion is a big part of your release budget.

If you already have a Web site, you can add the new text and photos that you recently acquired for little or no money. If you don't have a Web site, get one; it's one of the best ways for your fans to learn about you, buy your disc, and contact you. Starting a Web site from scratch, however, can quickly become

expensive. Ask around about Web site design, as there are many talented Web designers out there. Many of them would be happy to cut a deal to get their work featured on an artist's site. You should be able to build a nice starter Web site for \$500 to \$1,000. If you already have a site, you may want to give it a new look when releasing a disc. Changing the look of an existing site should only cost you a few hundred dollars if you need to hire out. (For more about online promotion, see "Working Musician: Pounding the Virtual Pavement" in the December 2004 issue of EM.)

Advertising is a necessity, and the cost can vary greatly depending on location and level of publication. When it comes to budgeting for advertising, the sky is the limit. For the sake of this article, I'll assume that you cannot afford newspaper ads, which can be very expensive. If you place smaller ads in local entertainment publications, you can usually get artist rates for \$50 to \$100. A half dozen

to a dozen ads should be enough if strategically placed.

REAP THE REWARDS

Using the examples in this column, expect to pay a minimum of \$2,400 for the most basic release and up to \$7,400 for a moderate release. A basic release means fewer discs, fewer pages of artwork, and a smaller geographical area of distribution and promotion. A moderate release would mean bumping up the budget to accommodate such things as better art, more pages in the CD booklet, more ads, and so on. Knowing your budget and spending it wisely is as important as the quality of musicianship and songs. A release is an investment that can very well yield good returns. Welcome to the music business and good luck!

David Phillips is a musician, media artist, and music marketing consultant. He can be contacted through his Web site at www.fivemasks.com.

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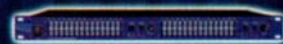
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REVIEWS

NATIVE INSTRUMENTS

GUITAR RIG 1.1 (MAC/WIN)

Virtual guitar-amp software with a real foot controller.

By Mike Levine

Following in the footsteps of their hardware counterparts, more and more software developers have been putting out products that feature guitar-amp and effects modeling. Recently, Native Instruments added a new twist to the genre by releasing Guitar Rig, a product that not only includes modeling software, but also a programmable foot controller. Guitar Rig is positioned as more than just a personal-studio recording tool: a laptop-equipped guitarist could also use it as a portable rig for both studio and live applications.

The Guitar Rig software can operate either as a standalone application or as a plug-in (VST, RTAS, or DirectX on Windows; VST, Audio Units, or RTAS on Mac OS X). It offers four different amp models to go along with a wide range of cabinet, effects, and microphone models. The software also includes a tuner, a metronome, and two "tape decks," which are actually digital

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Native Instruments Guitar Rig 1.1 (Mac/Win)

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Quick Picks: Dave Smith Instruments Poly Evolver; Metasonix TX-1 Agonizer; Eventide Octavox (Mac); Electro-Harmonix 16 Second Digital Delay



FIG. 1: You add components to your rig by double-clicking their icons in the Left View or by dragging them into the right frame at any spot in the signal chain.

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recorders—one equipped with pitch and tempo controls—designed to be used as practice and learning aids.

Guitar Rig is a tweaker's dream come true. It gives you the power to easily configure complex rigs with complete control over the order of the effects, and offers options for splitting signals and setting up parallel signal chains.

INSIDETHE RIG

I installed Guitar Rig on my dual G5/2 GHz Mac, and ran it successfully as a standalone application and as an Audio Units plug-in in MOTU Digital Performer 4.12, Emagic Logic Pro 6.41, and Apple GarageBand 1.1.

Once you've installed and opened the software (either in standalone or plug-in mode), you see the main screen, which is divided into two large sections and a third smaller one above the right-hand side (see Fig. 1). The large section on the right represents the virtual rackspace.

When you open Guitar Rig for the first time, the right frame contains what



FIG. 2: Guitar Rig offers extensive file management and search features to help you keep track of your presets.

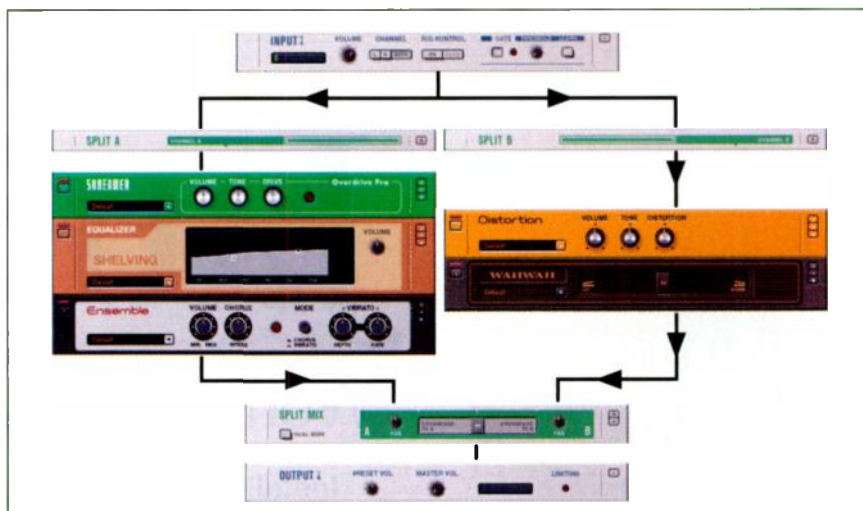


FIG. 3: As this example shows, the Split component gives you lots of control over the signal flow in your rig.

Native Instruments calls the Fixed Rack components: the tuner, the two tape decks, the metronome, and the Input and Output modules. It's here that you can drag in additional components from the Left View, and arrange their order in the signal chain. You're limited only by your processor's power.

The Left View has three main functions. It's where you choose the amp models, speaker models, and effects by double-clicking them or dragging them into the right frame at the spot in the chain you want them to appear. If you decide you don't want a component that you've installed, just click and drag it to the Left View and it disappears from your rig.

When you click on the file icon on the upper left, the Left View transforms into a place to manage your presets and banks (see Fig. 2). The unit comes with 250 presets (including several for electric bass), which are broken up into a number of banks. You can look through a master list of all the banks, and below it is a listing of the presets in which-ever bank is currently selected. There's a search function that lets you hunt through the entire collection by type, keyword, author, and other attributes.

You can copy presets into other locations or into banks by Option-dragging them (Ctrl-dragging on the PC), and if you're modifying a preset and want to save it to another location while keep-

ing the original intact, you press the Append button and the tweaked preset is saved to the next open space on the list (each bank is limited to 128 presets). The Left View's other function is for setting preferences, and configuring the Rig Kontrol Pedal.

Above the two frames is the Control Center, which gives you buttons to show or hide some of the Fixed Rack components; dial up, rename, and save presets; check CPU usage; and turn on or off the Virtual Rig Kontrol, which is a software version of the Rig Kontrol pedal. At the very top are input and output meters, a main volume control, and a switch for turning off the global limiter.

EMULATE, EMULATE, EMULATE

Although Guitar Rig has only four amp models—less than many other modelers—the ones it does have are both good and deep. My favorite is called Instant Gratifier, which is designed to emulate Mesa/Boogie tones. It offers four channels—Clean, Raw, Vintage, and Modern—and can give you a wide range of fine-sounding tones (see Web Clip 1).

The Plexi amp model produces some fat and crunchy Marshall-type sounds. It offers a Bright channel and a Warm channel, which can be mixed together. Like the other components, it offers a row of additional parameter controls

the difference a pro makes



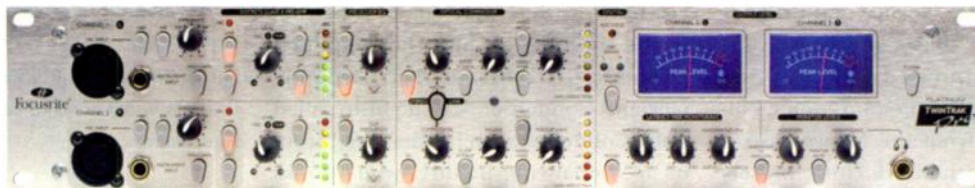
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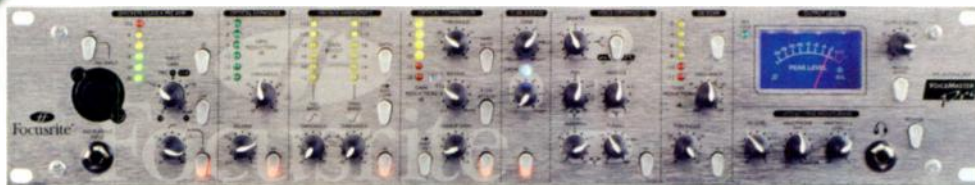
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● GUITAR RIG

that can be accessed by clicking on the plus sign on its upper right hand corner. Like the other amp models, these expert controls include emulated variac and bias adjustments, among others.

The Twang Reverb model gives you Fender emulations. Its front-panel controls include Speed and Intensity for its vibrato effect, and Volume, Bass, Middle, Treble, Reverb. I wasn't initially that impressed with the Twang Reverb, because of the factory presets that make use of it. To my ear, they didn't capture the nuances of Fender tone, especially the clean sounds (frequently the Achilles' Heel of amp modelers). Once I got familiar with the editable parameters and started programming my own presets, however, I was able to dial in some pretty convincing Fender-style tones, both clean and distorted (see **Web Clip 2**).

The most recent addition to Guitar Rig's amp collection is called AC Box, which closely mimics a Vox AC30. It includes controls for Normal and Brilliant volume, Treble, Bass, and Tone Cut. I wasn't that impressed with it at first either, but after downloading some killer Vox presets from the Native Instruments Web site (the Dark Horse presets that are used in the Guitar Rig tutorial), I started to appreciate its sonic potential (see **Web Clip 3**). Overall, the factory presets that come with Guitar Rig do a good job of demonstrating its various bells and whistles, but they don't show-

case the best sounds that the software is capable of producing.

WHAT'S IN THE CABINET?

In a real amp, the speaker cabinet plays an important role in determining the tone. The same is true of Guitar Rig, which has extensive cabinet-modeling features. You can choose from 14 cabinets, ranging from 1x12 models with virtual Alnico magnets, to 4x12 behemoths that you might find in a Marshall stack. You get default configurations for each of the four amp models, but you can mix and match any amp with any cabinet.

There's even an option to change the virtual size of the selected cabinet model, reducing it by a maximum of 30 percent or increasing it up to 40 percent. It's a less dramatic effect than you would expect based on the size of those percentages, but it does give you some additional sonic flexibility.

You also get a choice of five mic models, four of which have names that describe the type of mics they emulate: Dynamic 57, Dynamic 421, Dynamic 609, and Condenser 87. The fifth, called Tube Condenser, can be identified from its accompanying picture, which looks a lot like a Blue Bottle. The mic emulations succeed in giving you at least the flavor of the mics after which they're modeled.

You also can choose from five mic-placement options: On Axis, Off Axis,



FIG. 4: The Rig Kontrol pedal gives you four programmable on-off switches and a programmable expression pedal.

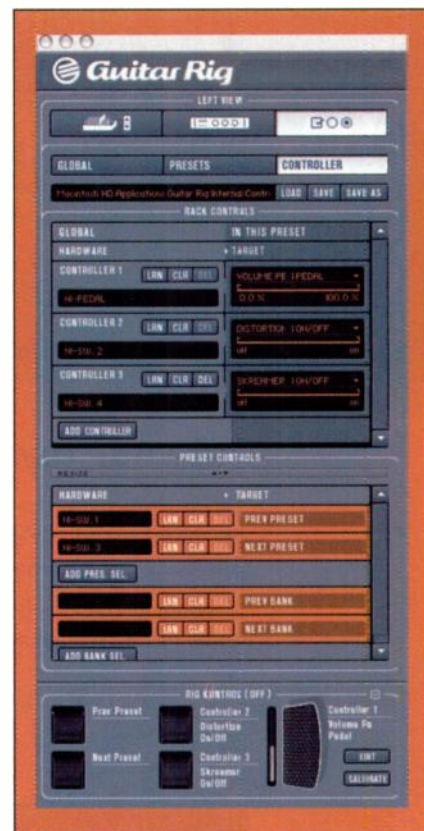


FIG. 5: The Virtual Rig Control and the Rack Controls window make customizing the pedal setup easy.

Edge, Far, and Back (Back works only for open-back cabinets). Mic placement in Guitar Rig, as in the real world, has a big effect on the sound.

You can have multiple cabinets on an amp, and for each you can adjust volume, bass, treble, and pan. If you're using two cabinets and you pan them opposite each other, it's possible to produce some very full stereo sounds. Air and Distance are two other cabinet parameters. Air adjusts the virtual early reflections, allowing you to add some simulated room sound. Distance, which is only available when you're using multiple mics on a cabinet, lets you adjust the simulated space between the mics.

I WANT MY WAH-WAH

The effects modeling in Guitar Rig is extensive. Like the amp models, effects are organized into categories in the Left View, from where they can be dragged into your rig. The Distort category includes Screamer, obviously modeled

Minimum System Requirements

Guitar Rig

MAC: PowerMac G4/733 MHz CPU; 512 MB RAM; Mac OS 10.2.6; VST, Audio Units, or RTAS compatible host for plug-in.

PC: Pentium/700 MHz or Athlon XP/1.33 GHz; 256 MB RAM; Windows XP; VST, RTAS, DirectX compatible host for plug-in.

from an Ibanez Tube Screamer; Distortion, which appears to be based on a Boss DS-2 pedal; and Treble Booster, which is patterned after the effect of the same name made popular by Brian May, Eric Clapton, and other British guitarists. All three emulations are quite convincing. (Version 1.2 of Guitar Rig, which was just released at press time, offers four additional distortion models.)

The Mod (Modulation) category components include Tremolo, Stoned Phaser (based on an Electro-Harmonix Small Stone), Chorus + Flanger, Ensemble (similar to old Boss CE-1 pedal); Oktaver (which resembles a Boss OC-2 pedal), and Rotator, a rotating speaker effect that Native Instruments took from its B4 Organ plug-in. They all sound good, but I particularly liked Rotator, which can produce some striking stereo Leslie effects (see **Web Clip 4**).

The Filter category contains five components. The first two are Wah-Wah Pedal and TalkWah, which can both be controlled from the Rig Kontrol's pedal. The other three are equalizers: EQ Shelving, which offers two adjustable shelving filters; the two-band EQ Parametric; and the eight-band EQ Graphic. Between the EQs and the tone controls on the various amps, you have a huge amount of tone shaping available.

The Volume components include a volume pedal, limiter, noise gate, and compressor, all of which are handy. The category called Other contains mostly ambient effects. There are two reverbs to choose from: Spring Reverb, which offers an effective emulation, and Studio Reverb, which provides smooth-sounding hall and room effects.

You get two delay choices. Quad Delay offers a 4-tap stereo delay that can be synced to the host tempo when Guitar Rig is in plug-in mode, or to the metronome when the program is in standalone mode. Psychedelay is a true-stereo delay that can also produce cool backwards delay effects.

Split is the final component, and it opens up a lot of routing possibilities. It lets you divide the signal path into two at any point in the chain, sending a split signal (which can be split again and

again) to parallel groups of components (see **Fig. 3**). If you use the Dual Mode function, you can have two parallel rigs, plug two guitars in at the same time, and process them separately.

Only your processor's power will limit the complexity of the rigs you program. Bear in mind that Guitar Rig does use a significant chunk of CPU power, so don't expect to be able to easily use multiple instances of the plug-in unless you have a really fast computer.

Another nice touch is the pull-down




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Rig Kontrol Specifications

Audio Inputs	(2) ¼" TS
Audio Outputs	(2) ¼" TS
Input Impedance	1 m
Output Impedance	100
Gain Controls	2 (0 dB–21 dB range)
Programmable Foot Switches	4
Programmable Expression Pedal	1
Power	9V battery (included) or external AC adapter (not included)
Dimensions	11.9" (W) × 2.4" (H) × 8.3" (D)
Weight	4.2 lbs.

menu of internal presets called Templates that are found in each component. You can save your own Templates and even set up your own default templates for any or all of the components.

During all my testing of the software, I discovered only one bug. Guitar Rig's bypass function didn't work in Digital Performer. Though not a fatal flaw, it

was an annoyance; I hope Native Instruments will address it in a future update.

WHAT ABOUT THE PEDAL?

Although it's not essential for the software's tone-producing functions, the Rig Kontrol pedal is what really sets Guitar Rig apart from its competitors (see Fig. 4.) Featuring an assignable pedal and four

on-off footswitches, the blue-and-black pedal serves as a bridge between the virtual amps and processors and the real-life guitarist. As a result, the experience of using Guitar Rig closely resembles that of playing through a hardware-based guitar multi-effects pedal, but with more possibilities. The pedal lets you control effects like wah and volume and gives you a huge range of parameters for all the components.

Configuring the pedal took a little getting used to. The pedal outputs both the guitar signal and a control signal that is used to send controller information into Guitar Rig, and you have to set everything just right for it to function. The Rig Kontrol, which also functions as a preamp, is powered by a 9V battery, but it has an input for an AC adapter (you have to find a compatible third-party adapter). You setup the Rig Kontrol using the Virtual Rig Kontrol display in the Left View (see Fig. 5), and you can map a huge range of parameters to the pedal and the switches.

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PRODUCT SUMMARY

Native Instruments

Guitar Rig
amp-modeling software with
control pedal
\$499

FEATURES	4.5
EASE OF USE	4.0
QUALITY OF SOUNDS	4.0
VALUE	4.0

RATING PRODUCTS FROM 1 TO 5

PROS: Innovative integration of modeling software and control-pedal hardware. Rig Kontrol pedal gives you real-time control over numerous parameters. Accurately emulated amp models. Plentiful effects. Flexible signal chain that's easy to configure. Included tuner, metronome, and digital recorders.

CONS: Presets don't show software's full potential. Bypass function doesn't work in Digital Performer.

Manufacturer

Native Instruments USA
Tel.: (866) 556-6488 or (323) 467-5260
Email: info@native-instruments.com
Web: www.native-instruments.com

Parameters can also be controlled with external MIDI controllers.

RIG IT UP

All told, Guitar Rig is impressive. You get four quality amp models and a huge range of excellent-sounding cabinet and effects models, all with plenty of tweakable parameters. Add to that the flexibility of the Rig Kontrol, and you have yourself quite a package.

If you're a guitarist who records into your computer, you'll want to give Guitar Rig a test-drive. (You can download a 30-day demo of the software from the Native Instruments site.) Now that I've had a chance to use Guitar Rig for a while, my external-modeling processors may have just become irrelevant.



Mike Levine is an EM senior editor who's been known to pick up a guitar every now and then (or every five minutes, whichever comes first).

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MACKIE

SPIKE (MAC/WIN)

*Budget recording system
with versatile hardware
and software.*

By Rusty Cutchin

Mackie's Spike powered recording system brings together all the essential add-ons for a basic computer-based recording environment: USB audio-MIDI interface with ASIO, WDM, and OS X Core Audio support; multitrack recording software; and a generous supply of effects. That may be a standard combination of tools, but Spike is a new dog with new tricks for a package in this price range.



FIG. 1: The XD-2 USB audio interface provides I/O and DSP functions for the Spike system and is secured by a swivel base that can be tucked away for transport.

The system boasts hardware processing of dynamics and EQ; a unique recording program, Traktion, which offers a simplified graphic interface; and the Nomad Factory Warmer Phaser plug-in. The package is impressive, but does its performance make Spike a bulldog or just a lovable puppy for novice recordists?

READY FOR LAUNCH

The brains of the system are contained in the XD-2 audio interface (see Fig. 1), a deceptively simple desktop unit that resembles, depending on how you view it, a rocket ship or a slice of charcoal and silver pie. The slim interface sits vertically and is stabilized by a unique spring-loaded arched base that must be pulled from the bottom of the unit and rotated to a position perpendicular to the main body for stability.

The base is important; without it the 2¼-pound XD-2 will stand on its own but fall over easily if bumped. A warning label urging the user to position the base first would be helpful; those who want to rip open the box and start using the XD-2 without reading the setup guide might not realize the base is tucked into the bottom of the unit. The base provides a safe anchor, but you still need to hold the unit when inserting or unplugging a headphone jack.

Viewed head-on, the XD-2's surface looks like a truncated channel strip and offers some of the same functions. At the top of the front panel are the channel 1 input controls: a button to switch the channel's input from mic to instrument, a button to engage a digital highpass filter in the input's signal path (postconversion), and a gain pot. Below that is a duplicate set of controls for channel 2, and between them is a button to engage 48V phantom power on both mic inputs.

Three pots, labeled Mix, Monitor, and Phones, reside beneath the channel 2 input controls. The Mix pot adjusts the level of input signal relative to audio from the computer. At the fully counterclockwise DIR position, only signals fed to the XD-2's inputs can be monitored at the unit's outputs. At the

PRODUCT SUMMARY

Mackie

Spike
desktop recording system
\$495

FEATURES	4.0
EASE OF USE	4.5
AUDIO QUALITY	4.0
VALUE	4.5

RATING PRODUCTS FROM 1 TO 5

PROS: DSP in hardware; Front panel Mix control on XD-2. Simple setup. Versatile software. Extensive pop-up help in Traktion.

CONS: Windows XP or Mac OS X only. No insert points on XD-2. No external sync in Traktion.

Manufacturer

Mackie Designs Inc.
Tel.: (800) 898-3211
Email: sales@mackie.com
Web: www.mackie.com

fully clockwise USB position, only audio from the computer is available. Rotating the pot to a midpoint provides a mix of input and playback audio. The Monitor and Phones pots control the levels at the unit's main outputs and front-panel headphone jack respectively.

ROUND BACK

The XD-2's quarter-round rear panel (see Fig. 2) creates some extra space between plug ends and makes access to connections easy. The topmost connections are standard S/PDIF in and out, followed by MIDI In and Out and monitor L/R jacks, which accept ¼-inch TRS plugs. Two combo connectors for channels 1 and 2 reside below the monitor outputs. The connectors can accept balanced ¼-inch instrument cables or XLR mic connectors for feeding the unit's mic pres. The XD-2's 9 VDC power connector and USB port are below the combo connectors. The unit does not get power from the USB port.

The power supply is necessary for one of the XD-2's most attractive features: the internal SHARC chip that provides

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FIG. 2: The XD-2's curved rear panel provides basic S/PDIF, MIDI, USB, mic/instrument input, and monitor output connections.

digital signal processing on input or during mixdown. Those controls are accessed from the XD-2's control panel, which is included with other third-party software on the installation CD-ROM.

IN CONTROL

The Spike system supplies drivers only for Windows XP and Mac OS X. (For this review I used a dual-processor Power Mac G5/2 GHz with 512 MB of RAM running Mac OS X 10.3.4.) Installing the driver is simple but requires a Web browser; installation instructions are in an HTML file. The Spike user manual and Getting Started guide are included on the CD as PDF files. Other than a single-page "Quick Start Sheet," no hard-copy instructions are provided.

After installation the XD-2 icon appears on screen. Double-clicking on the icon opens the control panel in Setup mode. There you can save and load settings, switch to S/PDIF clock sync, switch between mono and stereo monitor settings, and choose the unit's sampling-rate mode. A soft-

ware update (available by download at mackie.com/spike_update/alpha2.html) will enable a 96 kHz sampling rate during recording or playback, but not simultaneously.

Clicking the Overview button in the View Select area at the extreme right of the panel provides input, routing, and meter controls. The USB button in the Input Select area determines whether the unit's DSP functions apply to audio signals at the XD-2's input section or those from the computer. You can select S/PDIF input in this area if a clock source is apparent at the S/PDIF input. The incoming digital signal will pass through the digital filters before accessing the other built-in effects.

Also in the Overview screen are indicators for high-impedance input and phantom power that light when one of their associated front-panel switches is depressed; LED meters indicating input and output levels for both channels; HP/LP Filter settings; and output gain controls. The front-panel gain pots control input levels when the USB button is off.

SIMPLE PROCESS

When you select the DSP button in the View Select area, the control panel shows the complete range of EQ, compression, and gate controls that are built in to the XD-2 (see Fig. 3). Each pair of modules can be linked for ste-

reo operation. You can't stretch the control panel window, but you can click the Zoom button in the left margin to enlarge one channel's modules into the full window and click the S button to toggle channels. The enlarged view makes it easier to see graphs and buttons.

One design element of note: The XD-2's lowpass and highpass filter graphs show up in the EQ module's space when zoomed, although the filters occur in the signal path before the DSP section. The values for the four filters are set and the lowpass filters are engaged in the Overview section of the window. However, the highpass filters can only be engaged from the XD-2's front panel. All settings revert to default values when you exit the control panel, so it's a good idea to save XD-2 settings you will need again.

The modules work like standard plugins. You can drag nodes or sliders in any module to adjust parameters. In the EQ section you can adjust frequency, gain or Q (bands 2 and 3), or select shelving filters (bands 1 and 2). The compressor section provides the standard controls and meters, as well as a variable knee slider when the Soft button is selected. (A Limit button kicks the compressor's Ratio value to maximum.) The gate module provides a Ratio slider when the Expand button is selected to enable downward expansion.

Spike XD-2 Specifications	
Analog Inputs	(2) ¼"/XLR combo connectors
Analog Outputs	(2) ¼" balanced/unbalanced TRS
Digital I/O	Coaxial S/PDIF
Headphone Outputs	(1) ¼"
MIDI Ports	In, Out
Highpass, Lowpass Filters	18 dB/octave, 20 Hz–20 kHz
Dynamic Range	–101.0 dB (XLR In, nominal gain)
Distortion (THD) @ 1 kHz	<.009%
Frequency Response @ 0/–0.5 dB	20 Hz–20 kHz
A/D/A Converter	16-bit, 24-bit
Sampling Rate	44.1/48 kHz; 88.2/96 kHz
Dimensions	5.6" (W) × 8.85" (H) × 8.7" (D)
Weight	2.25 lbs.



ARP 2600 V



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WRH

GAINING TRACKTION

If you've ever been frustrated because software applications get more complex, expensive, and visually bloated with each revision, then Tracktion may be just the digital audio recorder and MIDI sequencer for you. Originally created by UK programmer and musician Julian Storer for Raw Material Software, Tracktion (now distributed exclusively by Mackie) attempts to wipe away the onscreen clutter created by multiple windows, including (yikes) the Mix window (see Fig. A).

At first that may make Tracktion appear to be a consumer-type program unworthy of serious studio use, but you'll be hard-pressed to find features that Tracktion doesn't offer. Taking advantage of them means learning some new ways of working, but it takes only one session to get hip to Tracktion's paradigm. And except for a minor inconvenience here or there, you may find that the savings on system overhead, screen redraw time, and cash (Mackie sells Tracktion on its Web site for \$80) are worth the trade-offs.

Tracktion offers unlimited tracks; a built-in sampler; VST, VSTi, and ReWire 2.0 support; and a FreezeTracks feature. The program supports DirectSound and ASIO audio devices in Windows as well as OS X Core Audio devices, and can handle any sampling rate supported by the system's hardware, performing playback sampling-rate conversion on the fly. There's also support for playback latencies below 3 ms (hardware permitting) and live recording and direct editing of automation elements.

FILTER TIPS

Tracktion implements many of its features in unique ways. A modification to an audio clip (including a volume or pan change) requires a "filter." When in use, filters are represented by icons that sit in a space to the right of the track. When you want a compressor, overdrive, delay, or other processor, you simply drag the filter icon into a track, and a

pop-up window appears. You choose the filter you want, and its parameters and settings appear in the large area at the bottom of the screen. (Third-party plug-ins appear in their original windows.) Each track has three default filters—volume, pan, and meters—in place when a project launches. Volume and pan can't be deleted, but any other filter type can be added, deleted, or reordered at will.

You can also combine effects into "rack filters," which allow more complex routing schemes that can be saved. A ReWire filter is provided, so you can link Tracktion to other ReWire-savvy programs.

The input section to the left of the tracks area also makes use of icons, and with the Spike system, the XD-2's left and right channels and MIDI input each get an icon. To assign input 1 of the XD-2 to track 5 in Tracktion, for example, just drag the input 1 icon to the area left of track 5. Click on the icon, and all your options, including a level meter, appear at the bottom of the screen. With MIDI, drag the MIDI input icon to the front of the desired track, click on the icon, and pick an output destination such as the XD-2 for the MIDI data. You can also drag VST instruments onto a track to receive MIDI data. A simple VSTi synth is one of the Maxim Digital Audio plug-ins included with Tracktion.

POP GOES THE HELP

If Tracktion's limited graphical interface makes you scratch your head, you'll be snapped to attention by all the pop-up info and help screens that jump into action with virtually every cursor movement. Some users may find all the messages confusing, but I thought they made it easy to learn the program without a manual. Only a limited HTML file (mostly an extensive FAQ list with linked answers) is available. But if you have any



FIG. A: Tracktion saves overhead by eliminating windows and providing dedicated areas on the main screen for plug-in parameters and filter icons, which can be placed into a track where needed.

experience with sequencers, the pop-up help is all you'll need, and you'll probably turn the feature off in about an hour.

Tracktion also offers a full range of file-management options, common file import and export capabilities, and selectable data compression. These schemes make it easy to transfer files on the Internet without loss of quality.

KEEP IT SIMPLE

Tracktion is a robust addition to the Spike system. The more I used the program, the more I enjoyed its simplicity and the power under its hood—power reserved for processing audio data rather than being eaten up by a complex graphical interface. For an \$80 sequencer, Tracktion packs a respectable punch.

The program doesn't have everything, of course. There's no built-in audio editor. Individual clips must be rendered to a new file and reimported for such simple processes as normalization. There's no provision for external sync. (According to Mackie, version 2, due out in early 2005, will offer this feature.) But Tracktion's ability to communicate through ReWire, make use of the wide variety of VST effects and instruments, and intelligently perform a multitude of tasks within one main screen make it a big advantage to the Spike system.

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WALKING THE DOG

I installed the XD-2 Mac driver and was happy to see communication with the computer established quickly. Because I was eager to check out the unit's DSP, I began my Spike experience by downloading Tracktion (see the sidebar "Gaining Tracktion") and recording some audio. I patched in a Roland synth to one of the XD-2's instrument inputs, and after a quicker-than-expected session with Tracktion's

onscreen manual, I began combining some drum loops and synth parts into a groove.

The XD-2's input section performed as promised. The synth sounds I initially fed it sounded fine through the XD-2's monitor outputs. I recorded a drum loop into track 1 of Tracktion, and started a bass overdub. I adjusted the XD-2's Mix knob and listened to the direct bass signal while playing to the recorded drum loop. No noise was

Minimum System Requirements

Spike

MAC: G3/650 MHz; 128 MB RAM; Mac OS X 10.2

PC: Pentium III/750 MHz; 128 MB RAM; Windows XP

generated by the interface's mix of direct input and audio signals from the computer. As you might expect, however, on playback the bass track was way behind the drum track.

I turned the Mix knob clockwise to the 12 o'clock position to compare the direct signal with its postcomputer version. The long delay indicated that a change in Tracktion's buffer settings was needed. Although the program allows sample settings as low as 14 (.3 ms), 64 was the lowest number the program could handle without digital noise and audio breakup. At this setting I could monitor in full USB mode, and tracks began to sync nicely. The XD-2's knobs exercised their digital control silently, and the unit's preamps lived up to the high-quality label Mackie assigns them.

That was also true when I plugged a pair of large-diaphragm condensers into the XD-2's mic pres and recorded a solo acoustic guitar and female vocalist. The results were virtually indistinguishable from the ones I obtained recording the same singer with an outboard tube preamp a week earlier. Only a tinge of added brightness on the top end indicated the later recording's mics were feeding a different preamp.

On the original synth groove, I added a short guitar lead. I plugged a Strat into channel 2, turned the mix knob to Direct, and set the XD-2's channel 1 compressor to a -3 threshold with a 10:1 ratio. I then accessed the included Warmer Phaser plug-in (see Fig. 4) from within Tracktion and added some reverb and distortion to beef up the guitar part. The Warmer Phaser's tube emulation improved the guitar part noticeably and Tracktion's drag-and-drop filter scheme worked seamlessly.

The resulting audio clip is available online (see Web Clip 1). Later I ran the

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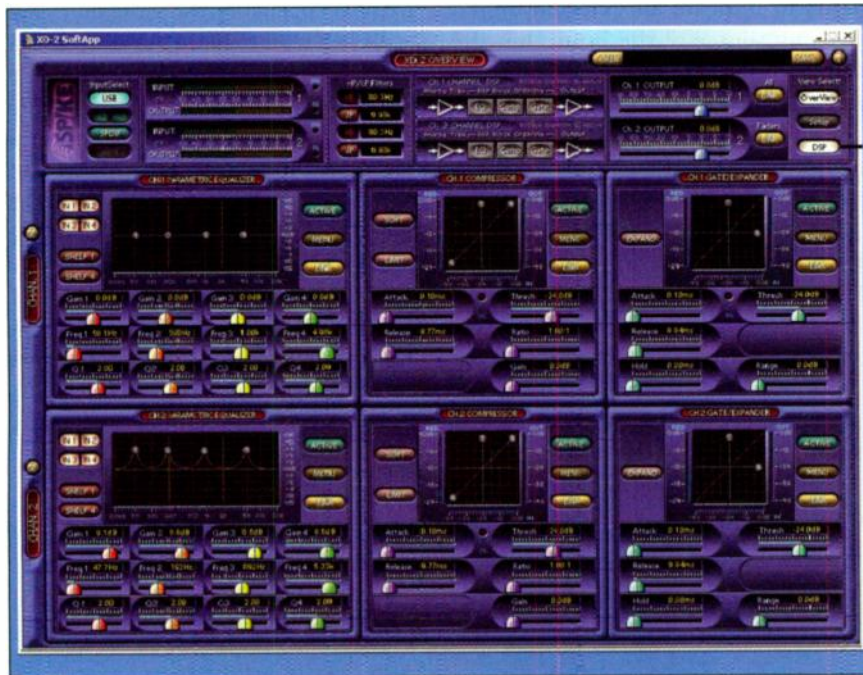


FIG. 3: The XD-2's control panel enables access to the unit's built-in DSP functions, which include 4-band parametric EQ, compression, and gating.

mix through the XD-2's stereo compressor and EQ to create a final mix (see [Web Clip 2](#)). The reprocessed mix, with added stereo compression and EQ from the XD-2, was recorded back into Traktion. The XD-2's onboard processing made the process transparent and speedy. The EQ and compression results were more than serviceable—not as smooth as high-quality third-party plug-ins, but fine for quick fixes on the demos for which Spike is most likely to be used.

RECORDIST'S BEST FRIEND

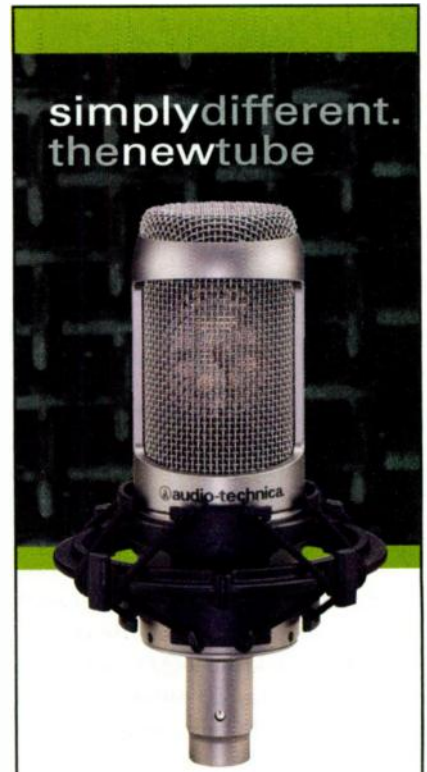
The Spike system's blend of a handy and efficient audio interface and (in Traktion) a one-screen, low-overhead recording application is a good bet for people who are new to recording. It's an even better bet for those who have some experience with sequencing. Spike also has great potential for the pro who needs a laptop-based system for travel or for live or field recording.

With hardware processing on the front- and back ends of the recording process, the system saves CPU cycles for those running Windows XP and Mac OS X on older computers. The compact and feature-rich XD-2 alone may justify the price of the system. And with the included software, Spike is a solid package for anyone who wants to create basic start-to-finish projects in their **EMWEB GLOOPS** computer.

Rusty Cutchin is an associate editor of EM. He can be contacted at rcutchin@comcast.net.



FIG. 4: Nomad Factory's Warmer Phaser plug-in, which is included with the Spike system, offers tube emulation.



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Z - S Y S T E M S

Z-QUALIZER

Top-shelf digital

EQ at a bargain price.

By Myles Boisen

Z-Systems' z-Equalizer EQ is a 6-band mastering-quality digital equalizer. It is the budget-conscious cousin of the company's flagship stereo mastering EQ, the z-Q2, and features the same low-distortion EQ algorithms, 24-bit/96 kHz capability, and complete parametric control. By scaling back the z-Q2's size and interface features, Z-Systems has crammed world-class EQ processing into a half-rackspace box.

Z-BASICS

The z-Equalizer has a modest look, with an unpainted steel case and a basic black front panel dotted with five 1/2-inch knobs (see Fig. 1). Three rotary dials labeled Gain, Frequency, and Q are located below the central data screen. Each knob performs its dedicated function when the unit is in the primary EQ mode. The knob set performs other multiuse duties when you select auxiliary modes.

A yellow-green LED indicates stereo (S) or dual-mono channel status in the EQ modes. During dual-mono use, an L or R blinks to alert users that the left and right channels are being controlled independently.

A Signal Present LED in the screen

lights to indicate an external digital clocking source at the input, but the display does not indicate either an audio signal or a gain level. The z-Equalizer doesn't have a gain meter, current sampling-rate indicator, or clipping meter in any mode.

Z-Q MODES

The rotary knob on the left side of the front panel controls z-Equalizer's various modes of operation. Each of these eight modes has its own status light, panel display, and roles for the three central knobs.

The selectable EQ function modes are located in the upper positions of the main pot (L is left-channel only, R is right-channel only, and S is stereo linked). Listed clockwise, the other five modes are Bypass, MIDI, M-S (middle-side or mono-stereo) and Dither, Save, and Load.

Bypass disables all EQ band settings while keeping previous stereo or dual-mono parameter adjustments in memory. One smart and user-friendly feature of the z-Equalizer is its ability to store a complete set of left, right, and stereo settings simultaneously. Consequently, separate dual-mono EQ curves are not changed or reset if you engage the stereo EQ mode while scrolling to the bypass position.

Loading and saving EQ presets is easy. Just select a numbered memory location (01 through 99) and click on a knob. You can't name z-Equalizer presets, but they are kept in memory if the unit is powered down. They can also be saved and accessed from a MIDI sequencer.

Whereas most of z-Equalizer's functions

are self-explanatory, using the unit's M-S or Dither menus mandates a trip to the manual. For dithering, you can select from among eight types: dithered or undithered 24-, 20-, and 16-bit types, and 16-bit POW-r dither types 2 and 3 (which are usable only at 44.1 or 48 kHz sampling rates). The documentation has details about the recommended uses for these algorithms.

M-S processing is unrelated to dithering and appears as yes/no commands



Z-Systems has

crammed world-class

EQ processing into a

half-rackspace box.

on the remaining two central knobs in that mode. M-S is basically an encode/decode operation that allows separate EQ and gain control over center-panned and side-panned information in the stereo spectrum. Removal of vocals in a 2-channel mix is the most common application of that process.

EQ BANDS

The rotary pot on the front panel's far right side governs the selection of four separate and fully parametric EQ bands, two shelving EQs, and an overall gain control. When adjusting EQ or channel gain, one knob-click represents 0.1 dB up or down within a range of ± 3 dB. Progressively larger gain increments are set for EQ and overall gain,

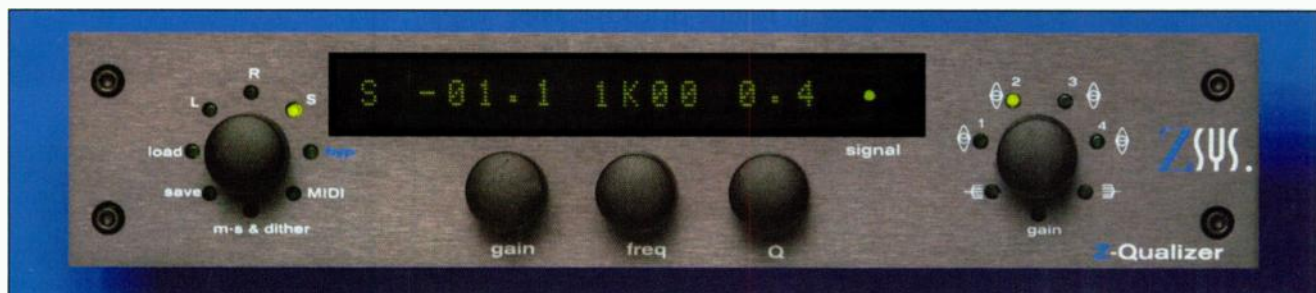


FIG. 1: The rotary knob on the front panel's left side accesses the Z-Systems z-Equalizer's eight modes. The chosen mode dictates the roles of the pots located beneath the display.

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you impressive specs like 123dB dynamic range and an amazing 0.0007% THD. The 800R also gives you tweaky features like a Mid-Side Decoder and Variable Mic Impedance control, which lets you "tune" the preamp to any connected microphone.

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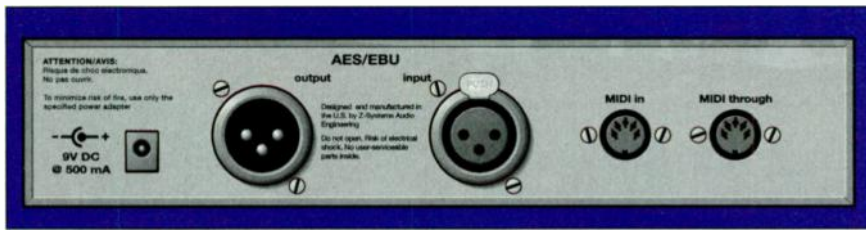


FIG. 2: The z-Equalizer's rear panel has a pair of AES/EBU input and output jacks, MIDI In and Thru jacks, and a power connection.

and the maximum ranges are +12 dB to -95 dB.

The frequency settings are preset at 1/3-octave intervals and are the same on all four bands. Q ratios range from 0.4 (very wide) to 8.0 (very narrow), with a generous array of 22 intermediate increments.

The z-Equalizer's back panel contains only a pair of AES/EBU input and output jacks, a pair of MIDI In and Thru jacks, and a connection for the external 9 VDC wall wart (see Fig. 2). The unit doesn't have a power on/off switch, analog I/O, or S/PDIF connectors. The underside of the module has three threaded sockets for mounting the chassis on a rack tray.

I WAS WORKING IN Z LAB

At my Headless Buddha Mastering Lab facility, I typically use the 5-band digital equalizer program in my TC Electronic M2000. I have grown attached to the convenience and features of the M2000's EQ program and have learned to appreciate some aspects of DAW-based EQ software. But after just one mastering session, it was easy to appreciate the z-Equalizer's pristine sound quality and range of control. It is especially conducive to subtle mastering tweaks, thanks to its 0.1 dB gain steps and the surgical precision of its Q settings. Z-Systems' EQ algorithms reminded me of the versatile and sweet-sounding filters in the AMS Neve Digital Film Console at Skywalker Sound.

The z-Equalizer also has remarkably low latency and no problems with zipper noise or audible clicks when changing gain or EQ on the fly. The 6-dB-per-octave high- and low-shelving EQs are gentler than what I'm used to

and a lot easier on the ears. When I auditioned a wide range of source material, I never heard evidence of typical shelving-gain distortion such as fuzzy or brittle highs or unfocused bass.

In critical upper-midrange frequencies around 3 kHz, the unit was always free of distortion or harshness. At times, the z-Equalizer was so smooth that it was unsettling. I made numerous bypass comparisons to confirm that the Z-Systems digital magic was indeed taking place!

That brings me to some issues I have with z-Equalizer's feature set; the least attractive one is its bypass mode. For mastering applications, I regard instantaneous bypass as crucial, and I prefer a simple, industry-standard bypass button for this oft-repeated task.

Repeated visual confirmation of the bypass position, followed by the necessary return to the desired EQ bank, became an annoyance due to z-Equalizer's

mode knob, which was sometimes unresponsive. In addition, the built-in bypass switching delay of as much as 1.5 seconds—programmed to eliminate switching artifacts—was a distraction.

Although the 0.1-dB-per-click-stop gain increment is standard for mastering, the action of the z-Equalizer knobs is not conducive to quick, coarse changes. A fast twirl of the EQ gain knob skipped over several of the associated pot's soft-click stops, producing a net gain change of only 0.3 to 0.4 dB. In such cases, five or six such turns are required to affect a 2 dB gain change. That characteristic of z-Equalizer's pots makes it difficult to audition a manual bypass on a single band.

Some users also might find the absence of an S/PDIF jack to be a disadvantage. And anyone planning on using the z-Equalizer regularly will want to invest in a rack tray. This model needs to be at eye level and in a rack for ease of viewing and 360-degree access to the knobs.

Z VERDICT

Z-Systems deserves an award for putting the power of its high-end mastering EQ at the fingertips of small-studio owners. Besides its mastering uses, the z-Equalizer is an ideal addition to any DAW front end. The

Z-Equalizer Specifications

Inputs/Outputs	24-bit AES/EBU
Gain Control	-95 dB to +12 dB
Filter Types	(4) parametric, (2) shelving
Center Frequency Resolution	1/3-octave ISO 28 Hz-20 kHz
Filter Bandwidths	Q = 0.4-8.0
Shelf Filter Slopes	6 dB/octave (first order)
Channel Separation	effectively infinite
Dither Types	24-/20-/16-bit proprietary floating-point, 16-bit POW-r Dither
Dynamic Range	> 144 dB
THD+N	< -135 dB
Processor Type	32-bit floating-point DSP
Sampling Rates	32/44.1/48/88.2/96 kHz
Power Supply	9 VDC @ 500 mA
Dimensions	8.5" (W) × 1.75" (H) × 8" (D)
Net Weight	3 lbs.

PRODUCT SUMMARY

Z-Systems

z-Equalizer
digital equalizer
\$1,200

FEATURES	3.0
EASE OF USE	4.0
AUDIO QUALITY	5.0
VALUE	4.0

RATING PRODUCTS FROM 1 TO 5

PROS: Same world-class, low-distortion EQ algorithms used in top mastering gear. Is 24-bit/96 kHz compatible. Stereo or dual-mono modes. Broad range of gain, frequency, and Q parameters. Affordable price. M-S processing. Has 99 preset locations. MIDI control. Generous selection of dither types. Compact half-rackspace case.

CONS: Bypass mode is unwieldy. Some controls are slow to respond. Unit needs to be rackmounted. No gain, sampling rate, or clipping indication. No preset naming. Lack of S/PDIF I/O is a disadvantage for some applications.

Manufacturer

Z-Systems
Web: www.z-sys.com

unit's features also make it an excellent choice for normalizing or pre-mastering at the end of any digital signal chain. Overall, the sonic quality of the z-Equalizer is subtle, pristine, and utterly transparent.

Although the z-Equalizer's performance was slowed by switching delays and sluggish controls and it lacked some conventional features, its value and sonics are a bargain. No competitor with z-Equalizer's attributes is available in its price range. My reviewer's crystal ball tells me that this affordable stereo mastering EQ is going to be popping up all over the personal-studio landscape soon—starting right here in my own mastering lab.

Myles Boisen is the CFO (chief frequency overseer) and dishwasher at Guerrilla Recording and The Headless Buddha Mastering Lab in Oakland, California.

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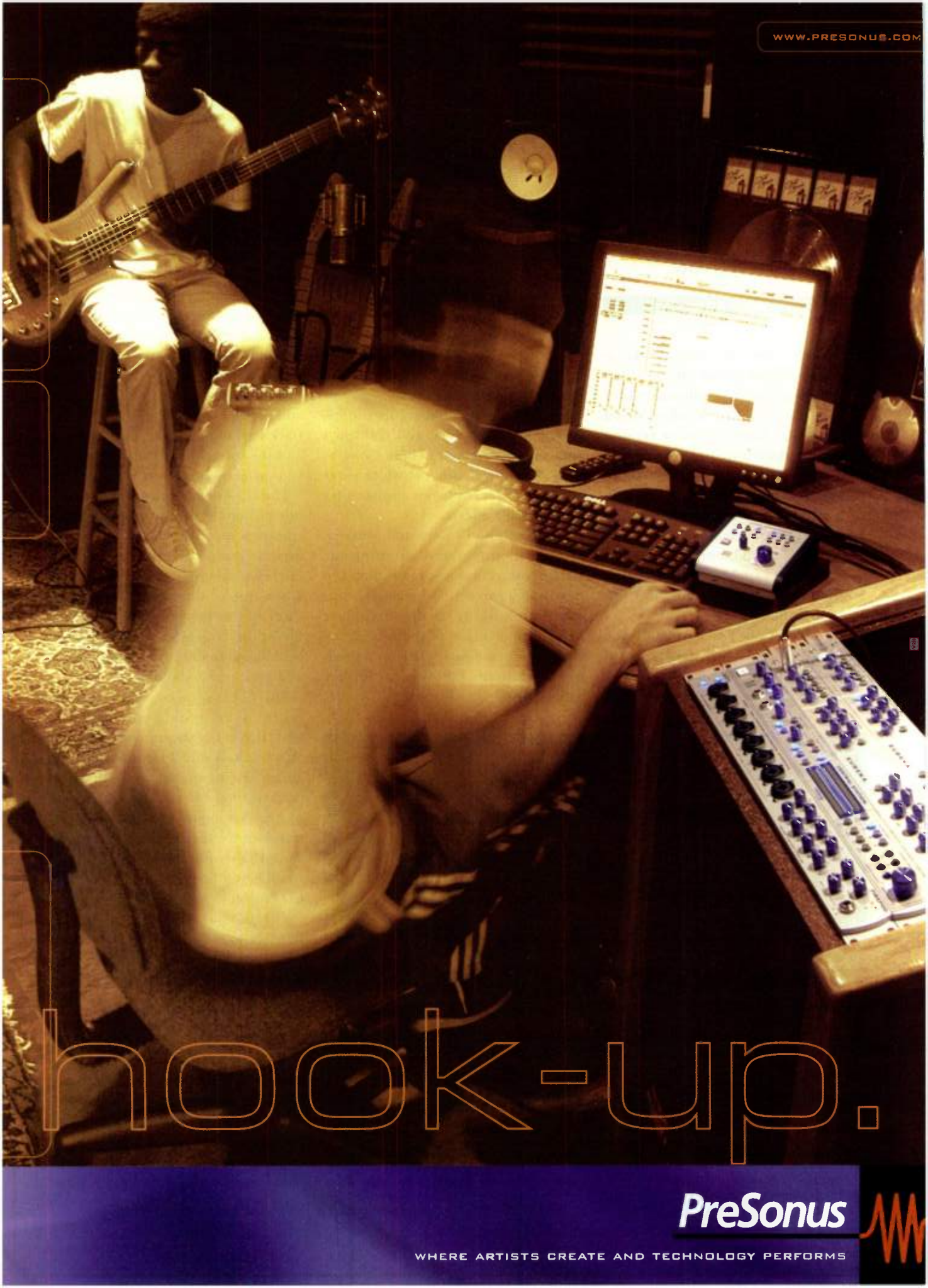


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ADOBE SYSTEMS, INC.

AUDITION 1.5 (WIN)

A powerful audio-editing tool gets another solid upgrade.

By Allan Metts

Adobe Audition (once known as Syntrillium's Cool Edit Pro) has always been a solid contender in the world of Windows-based audio editors. Now at version 1.5, Audition has blossomed into much more than a simple editor. With enhanced CD-burning capabilities, a new video track, and unusual spectrum-editing features, Audition has become a full-blown digital audio workstation, capable of performing complex tasks in real-time and offline environments.

I reviewed Cool Edit Pro 2.0 in the December 2002 issue of EM, so I'll focus on only the new features in this review. If you want to check out the

program for yourself, download the 30-day trial version at Adobe's Web site (www.adobe.com).

ON YOUR MARK

Audition installed without a hitch on my system, and I was up and running within minutes. On startup, you're presented with an attractive user interface that provides instantaneous access to the program's Edit and Multitrack views (see Fig. 1). The Edit view is for editing and applying offline effects to your audio files. The Multitrack view is where you assemble audio compositions and take advantage of real-time effects. The expected status indicators, buttons, meters, and transport controls are common to both views, as is the Organizer window, which gives you quick access to your project files and available effects.

All of Audition's views and windows are tightly integrated, allowing for efficient workflow as you develop the details of a project. For example, you can drag a file from the Organizer to its proper place in the Multitrack view, and then double-click on it there to open it in the Edit view for further refinement.

Minimum System Requirements

Audition 1.5

Pentium 400 MHz; 64 MB RAM;
Windows 2000/XP

BURN BABY BURN

A CD Project view, which integrates well with the rest of the program (see Fig. 2), is new to this version of Audition. To assemble the tracks of a CD, drag them from the Organizer window into the CD Project view. Once there, you can change track titles, set the amount of silence between tracks, and reorder tracks. Indicators give you track start and end times, track lengths, and the total time and disk space that your project consumes.

The CD Project view also allows portions of audio files to be used as CD tracks. Audition's Cue list, which is used to specify points and regions of interest within your audio files, now has a new type of Cue called Track. Track Cues appear beneath their associated file in the Organizer window and can be dragged to the CD Project view, just as if they were audio files.

The Cues-as-tracks feature was well suited for converting my vinyl LPs to CDs. Instead of saving each song as a separate audio file, I recorded an entire album side as one audio file and then created Cues for each song. Unfortunately, Cue names don't automatically translate to track titles—if you name your Cues with song titles as I did, you'll have to repeat the process in the CD Project view.

The CD-burning process worked flawlessly, and the professional settings, such as the copy protection and pre-emphasis flags, are an added bonus.

WHAT'S YOUR FREQUENCY?

Audition's new frequency-domain editing is by far my favorite addition to the program (see Fig. 3). In the past, Audition had the ability to display the spectrum of a sound, but now you can also edit the spectrum using Audition's audio-editing tools (cut, copy, paste, and so on). Furthermore, you can even



FIG 1: Adobe Audition's user interface is both attractive and efficient. You can move between tracking, editing, mixing, and CD-burning tasks with ease.

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● AUDITION

process selected regions of the spectrum using effects.

I put the new editing feature to work on a seriously blemished acoustic-piano recording that I haven't been able to clean using other tools. The recording contains chair squeaks, a dog sneeze, and the sound of a sustain pedal moving the dampers. Audition's Frequency-Space editing tools did the job.

Working in Audition's Spectral view, I was easily able to recognize the noisy arti-

facts, which appeared as vertical bars spanning the entire frequency range. Once I selected the offending frequencies with the new Marquee tool, I removed them using the standard Cut command.

For some of the blemishes, I captured a noise print of the highlighted frequencies and then used Audition's Noise-reduction tool to eliminate the offending audio. For others, I used the Silence command on the highlighted frequencies and then corrected the

audio by pasting in the frequencies that existed just before and after the noise. That feature alone makes Audition 1.5 worth the upgrade price.

MIND YOUR MULTITRACK

Several improvements have been made to the Multitrack view. Volume envelopes can be scaled directly with the mouse or the menu option. Using the mouse, you hold down the Alt key while dragging the envelope up or down. With the menu, choose how far (in decibels) you want to shift the envelope up or down.

Another rescaling function is invoked when you hold the Control key as you drag the envelope. That function shifts the points up or down proportional to the lowest points of the envelope.



Audition has

**blossomed into much
more than a
simple editor.**

Scaling using the Control key allows volume changes to either flatten out or become more extreme. Scaling using the Alt key shifts the volume of your entire envelope up or down, keeping the relative differences between envelope points intact.

There's also a new feature called Clip Time Stretch that appears in the Multitrack view. When enabled, dragging the lower-right portion of a Clip automatically initiates time stretching or compression without affecting pitch. That is a remarkably intuitive way to perform this operation, since you can use the visual cues of other tracks to assist you in stretching a clip to just the right length.

Video support is also improved in the Multitrack view. Audition now opens any video file in a format supported by Microsoft DirectShow (AVI, MPEG-2, and WMV, for example). If you import an audio track from an AVI file along with the video, you can remix the audio or even substitute a new music track

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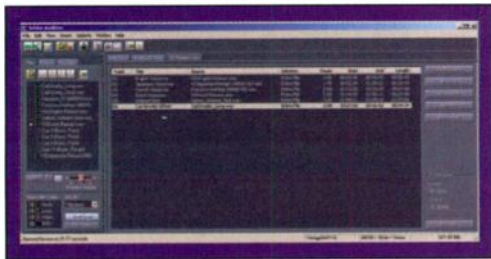


FIG 2: To assemble tracks for CD burning, drag files or Cues from Audition's Organizer window (left) to the CD Project view (right).

and save it back out as an AVI file. You can't, however, import a WMV movie and convert it to an AVI file.

Once imported, the video file appears in the Multitrack view, along with thumbnail images to help you keep your bearings (see Fig. 1). A separate video-preview window shows the images in real time (you can select high- or low-quality versions as needed). The bottom line is that you'll have no trouble doing audio-for-video work with Audition.

EFFECTIVE EFFECTS

Audition has always had an extensive suite of effects, and with Version 1.5 you get even more. Now you can use your favorite VST plug-ins, as VST support has been added alongside DirectX and Audition's built-in effects.

There are some great new built-in effects. Center Channel Extractor, for example, lets you boost or cut specific frequency ranges that span the stereo field. At first

I assumed this effect was useful only for zapping the vocals from established recordings (karaoke, for example), but it is capable of much more. If you realize too late that the female vocalist needs to come out a little more in the mix, that effect can save you. Predefined frequency ranges such as Male Voice, Female Voice, Bass, and Full Spectrum will get you going quickly.

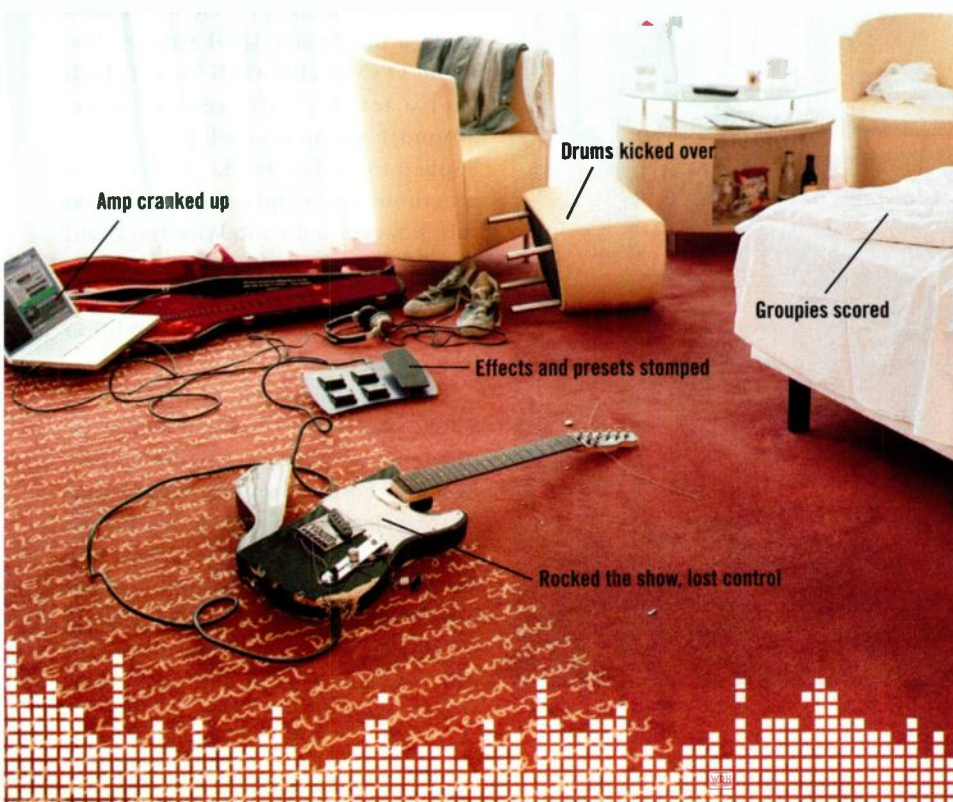
Audition's Pitch Correction effect lets you apply subtle or extreme pitch changes to a vocal or other performance.

The effect has two modes of operation. In Automatic mode, pick a scale and key (major, minor, and chromatic scales are supported) and adjust the sliders for attack and sensitivity. It's easy to achieve natural-sounding correction in this mode. By maximizing the sensitivity- and attack-slider levels, I achieved that Kid Rock-like synthetic "overcorrected" effect.

I especially like Pitch Correction's Manual mode (see Fig. 4). In it, the waveform of your performance aligned with a graph of the pitches that Audition detects in that performance. Using the same types of envelope tools found in the Multitrack view, you can draw in exactly how much pitch correction you want (up to four semitones in either direction). Manual mode is great if your vocalist missed only one or two notes during the performance.

Rounding out the new effects is an enhanced Click/Pop eliminator and Studio Reverb. Audition already had a Click/Pop eliminator, but it had complex controls and lacked real-time

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preview capabilities. The new automatic version is much simpler to use, and it performed just fine on my vinyl LPs. The original eliminator is still available if you need more precise control.

Studio Reverb represents Audition's third reverb effect. One of the others, Full Reverb, is a bit too CPU intensive for real-time use, and the second, QuickVerb, is too simple, although it's less of a processor hog. Studio Reverb strikes a happy balance between the two

and provides more control and quality than QuickVerb, but it remains nimble enough for real-time use.

CONNECT THE WIRES

Audition now supports Propellerhead's ReWire technology, which allows you to easily integrate ReWire-enabled soft synths into the program's Multitrack view. I tested this capability with Propellerhead's Reason and found that I could perfectly synchronize the transports of the two

PRODUCT SUMMARY

Adobe Systems, Inc.

Audition 1.5

multitrack audio editor

\$299

Upgrade from Cool Edit Pro: \$169

Upgrade from Audition 1.0: \$69

FEATURES	4.0
EASE OF USE	4.5
DOCUMENTATION	5.0
VALUE	4.5

RATING PRODUCTS FROM 1 TO 5

PROS: User interface supports efficient project workflow. Numerous effects (VST and DirectX). Integrated CD burning. ReWire support. Powerful frequency-domain editing.

CONS: Cue names don't link to CD track titles. No envelope support on ReWire tracks.

Manufacturer

Adobe Systems, Inc.

Tel.: (800) 833-6687 or (408) 536-6000

Web: www.adobe.com

programs. In addition, I had multiple channels of Reason audio within the Multitrack view that could be mixed down in tandem with other Audition audio tracks.

Unfortunately, I couldn't get Audition's MIDI track to play Reason's soft synths directly, at least not without using a third-party MIDI patcher like Jamie O'Connell's MIDI Yoke (which isn't a terribly inconvenient work-around). Audition envelopes can't be applied to ReWire tracks, nor can you arm those tracks and record them. You can, however, solo a ReWire track and "mix" it down to audio, which is almost as convenient. Audition's ReWire capability is a welcome and useful addition to the program.

In addition to the new features, Adobe has included some usability improvements. Highly configurable PreRoll and PostRoll settings ensure that you've selected the right audio before you apply an edit or effect. You can also choose what to play when pressing the Play and Circle-Play buttons on the Transport bar. For instance, you can hear PreRoll and your selec-

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tion when the Play button is pressed or hear just the PreRoll and PostRoll (without your selection) when Circle-Play is pressed.

GET ORGANIZED

The Organizer window has new preview features. You can have files play automatically as you click on them, and adjust the preview volume separately from the rest of the program.

For looped audio, you can automatically change the preview tempo to that of your session. You can even start the preview playback while the main Audition transport is running, which allows you to hear what a new file might sound like in the context of your song.

Speaking of looped audio, Adobe now includes 500 additional new loops with the program, bringing the total to more than 5,000. If you regularly create music with audio loops, that represents a tremendous value.

Audition's online help is task based and complete. You also get a nicely printed manual. Twenty sample sessions serve as excellent examples to get you started. If you're heavily involved with video, you can purchase Audition

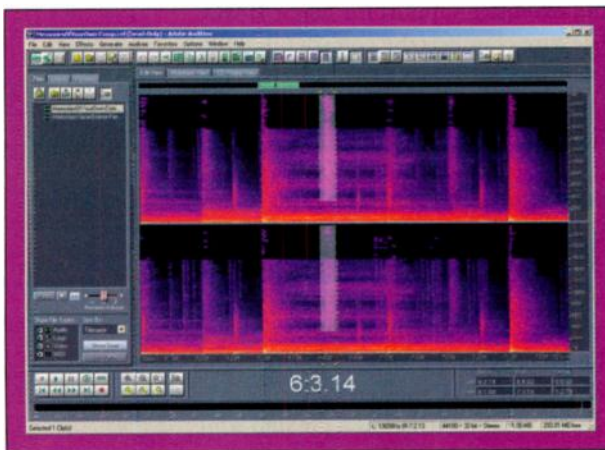


FIG 3: Audition's Frequency Space editing feature is powerful and easy to use. You can select specific frequencies and apply editing and effects, just as you can in the more traditional Waveform view.

as part of Adobe's Video Collection bundle—several of Audition's tools, menus, and keyboard shortcuts share common behavior with Premiere Pro and the other products in the bundle. You'll also find a demo of Minnetonka's DiscWelder Bronze to get you started in the DVD-A world.

It's worth noting that Audition doesn't have certain features that you'll find in some of its competitors. If you need significant MIDI support, advanced video editing, extensive DVD-A authoring and burning, or professional-grade surround editing, you might want to look elsewhere. But Audition costs a fraction of what you'd pay for programs like Steinberg WaveLab, Cakewalk Sonar, or Sony Vegas. And neither Sonar nor Vegas have the detailed audio-editing capabilities found in Audition's Edit view. As always, let your specific needs and your wallet be your guide.

All in all, Audition 1.5 represents a substantial upgrade. If you're an existing user, upgrading is a no-brainer. And if you are looking for a high-quality digital audio powerhouse, give Audition a whirl.

Allan Metts is an Atlanta-based musician, software/systems designer, and consultant.

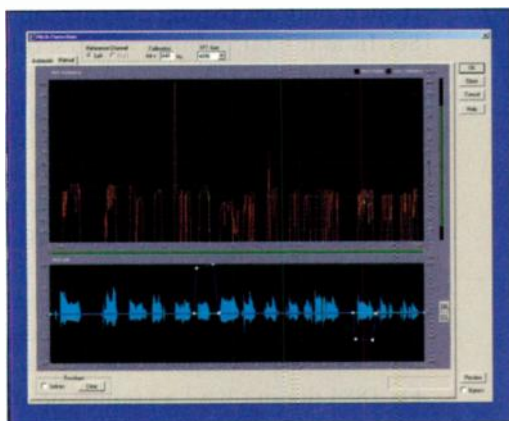


FIG 4: Audition's Pitch Correction effect includes a manual mode, which lets you apply precise adjustments to specific pitches in your studio.

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TASCAM

FW-1884

A studio control surface competes for space on your desktop.

By Larry the O

Control surfaces such as Tascam's multifunctional FW-1884 were practically nonexistent five years ago. Today, most studios perform all their mixing and other audio chores within a digital audio workstation (DAW). Audio I/O is still necessary, and for most work, tactile mixing control is preferable to mixing using a mouse and keyboard. Monitoring latency is a traditional weakness of DAWs.

Those issues, as well as the advantages of MIDI control, are addressed by the FW-1884 (see Fig. 1), which was codeveloped by Tascam and Frontier Designs. The control surface has motorized faders, as many as 18 channels of audio I/O, MIDI controller capabilities, a 4x4 MIDI router and merger,

and extensive support for major DAWs. FireWire connects the compact desktop unit to a Mac or a PC. Furthermore, the FW-1884 works as a standalone 18x2 monitor mixer.

HOB KNOB

Buttons allowing access to various FW-1884 functions and essential keyboard shortcuts are located at the top of the panel's left side. The middle contains the channel-strip area, and the right side contains the master section.

Each channel strip has a preamp trim pot; a motorized, touch-sensitive 100 mm fader; Mute, Solo, and Select buttons; a rotary encoder; and signal present, overload, and record-ready LED indicators. You can add as many as 15 optional FE-8 expanders (\$1,249 each) to the FW-1884; each expander adds eight more strips, for a maximum of 128 channel strips.

Two button arrays are located on the panel's left side. The top array assigns each channel's rotary encoder to control panning or aux-send level in the DAW. The Flip button swaps the fader and rotary encoder functions on a channel strip. The bottom array puts many fundamental keyboard shortcuts at your fingertips—cut, copy, paste, undo, loop, drop marker, and so forth—and offers

PRODUCT SUMMARY

Tascam

FW-1884

control surface/audio/MIDI interface

\$1,599

FEATURES	4.0
EASE OF USE	3.5
AUDIO QUALITY	4.0
VALUE	4.0

RATING PRODUCTS FROM 1 TO 5

PROS: Audio interface, DAW control, and MIDI control in one box. Good feel. Full-size transport buttons and smooth jog/scrub wheel. Works with most DAWs. Sampling rates to a maximum of 96 kHz. Remote track arming. Standalone mixing. Expandable.

CONS: Insufficient documentation. Minimal metering. Limited marker location. Incompatible with some audio cards. No graphic or alphanumeric display.

Manufacturer

Tascam

Tel.: (323) 726-0303

Web: www.tascam.com



FIG. 1: FireWire connects the Tascam FW-1884 to a Mac or a PC, giving DAW users an 18-channel audio interface, a multipoint MIDI interface, and a control surface with motorized faders. The top panel organizes controls in functional groups, with channel strips in the middle and transport controls on the lower-right side.

modifier keys such as Shift, Control, and Alt/Command.

Master monitoring-level knobs are located at the top of the Master section. Below are knobs and buttons for controlling EQ and plug-ins. The motorized master fader is below those knobs. The transport section has traditional full-size transport buttons, an assortment of other transport-related buttons (Nudge, Locate, and Set In and -Out points), a jog/scrub wheel, and control keys (cursor and bank-switch arrows). A group of eight buttons above the transport section perform system functions (clock configuration, monitoring control, and automation control). There are also buttons for selecting modes, status indicators for MIDI routing and digital connections, and two 12-LED ladders for master stereo output metering. The FW-1884 doesn't have a graphic or an alphanumeric display, but the supplied Soft LCD shows a scribble-strip-type display for the FW-1884's controls on your computer monitor.

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FIG. 2: All of the FW-1884's I/O connections are on the rear panel. Each channel has balanced 1/4-inch and XLR jacks that you can use simultaneously. Four sets of MIDI In and Out ports accommodate 64 MIDI channels.

SLIP OUT THE BACK, JACK

The FW-1884 accepts eight channels of analog audio in and out, eight channels of ADAT Lightpipe in and out, and stereo coaxial S/PDIF in and out. All 18 ports appear in your DAW like any other audio I/O. Each analog input channel has balanced XLR mic and TRS line inputs and a TRS insert jack. Both inputs are simultaneously active, so there's no mic/line switch. A switch on channel 8 turns the TRS input into a high-impedance (1 MΩ) instrument input, essentially a guitar DI. You can switch 48V phantom power on and off in 4-channel groups. The FW-1884 converts analog audio to 24 bits at sampling rates as high as 96 kHz.

In your DAW software, you can assign the eight +4 dBu balanced TRS outputs as combinations of stereo outputs, sur-

round outputs, aux sends, and so on. Eight outputs allow you to stream stereo and 5.1 outputs simultaneously.

The rear panel has two FireWire ports, four MIDI In and four MIDI Out ports, word-clock input (with termination) and output on BNC connectors, a 1/4-inch headphone jack, a 1/4-inch footswitch jack, and a power switch (see Fig. 2).

DUAL-BOOT INSTALLATION

Hardware installation of the FW-1884 couldn't be simpler. All you have to do is connect it to your computer's FireWire port and to the rest of your equipment's MIDI, audio, and word-clock connections. For me, however, software installation was more complicated.

When I received my review unit, updated software was available: that's not uncommon with new products. First,

I downloaded and ran a firmware update from Tascam's Web site. Because I was transitioning from Mac OS 9 to OS X on my dual-processor Power Mac G4/800 MHz, I ran the latest installers for both operating systems and the control-surface driver installers for MOTU Digital Performer (DP)—one for DP 3.1 in OS 9 and one for DP4 in OS X—in order to use Native protocol (I used DP versions 3.11 and 4.12).

Right away I encountered some setup problems as a result of incomplete documentation. Although DAW-specific application notes on the included CD-ROM contain important setup information, the FW-1884 Setup Guide never directly refers you to them. Furthermore, the application notes failed to list the files required for operation and where they should be installed.

In OS 9.2.2, the FW-1884 didn't show up in FreeMIDI even though the appropriate driver was in the proper location. After considerable poking around, I discovered two checkboxes in the FreeMIDI Preferences dialog box that enabled the FW-1884. Those settings were neither documented nor mentioned by any of the three Tascam support staff members I spoke with. In fact, according to Tascam, its support staff has never encountered another Mac OS 9 user with the same problem.

Fortunately, while I struggled with the OS 9 problem, I got the FW-1884 working with DP 4.12 under OS X 10.3.2, but I still had problems. DAW control and MIDI worked but audio did not. The FW-1884's inputs and outputs showed up correctly in DP's menus, but no audio was passing.

FW-1884 Specifications

Sampling Rates	44.1, 48, 88.2, 96 kHz
Sampling Resolution	24 bits
Analog Inputs	(8) balanced XLR, 48V phantom powered; (8) balanced 1/4" TRS; (8) unbalanced 1/4" TRS inserts
Analog Outputs	(8) balanced 1/4" TRS; (1) 1/4" stereo headphones
Digital I/O	(1) coaxial S/PDIF I/O; (1) ADAT Lightpipe (switchable to optical S/PDIF) I/O
MIDI	(4) MIDI In; (4) MIDI Out
Other Connectors	(1) word sync in; (1) word sync out; (1) 1/4" TS footswitch; (2) FireWire
Faders	(9) 100 mm motorized, touch-sensitive
Power	100, 120, 230, 240 VAC
Dimensions	22.9" (W) × 5.4" (H) × 18.9" (D)
Weight	22.7 lbs.

After I called tech support, I discovered that the FW-1884 had trouble working with my system's MOTU PCI-424 card and attached interfaces. Apple's Core Audio supports multiple audio drivers, and MOTU software can combine FireWire and PCI-424-attached interfaces, but the problem was related to the hardware, not the driver. When I physically removed the PCI-424 card from my Mac, the FW-1884's audio worked fine. Tascam representatives say that they hadn't previously documented that incompatibility because they were unaware of it.

MAJOR MODES

Tascam divides the FW-1884's functionality into three modes: Computer Control (for DAWs), MIDI Control, and Monitor Mix. The FW-1884 can control DAWs using its Native protocol or it can emulate the Mackie HUI or Mackie Control protocols; my comments in this review apply to Native protocol.

In Computer Control mode, the channel strips control DAW mixer functions in

8-channel banks. You select which bank the channel strips currently control using the Bank buttons. The host software determines the number of banks, and as many as 64 banks are available in DP. Level, pan, solo, mute, and even track arming are instantly controllable. Onboard track arming speeds up recording sessions, and I'm happy to see that feature here.

The DAW you use determines which functions the FW-1884 provides. Tascam's Web site currently has downloads supporting Native protocol for DP (version 2.7 and above), Cakewalk Sonar (version 2.20 and above), and Emagic/Apple Logic (Platinum 6.0 and above). You can use the HUI or Mackie Control protocols for additional DAWs that support those programs.

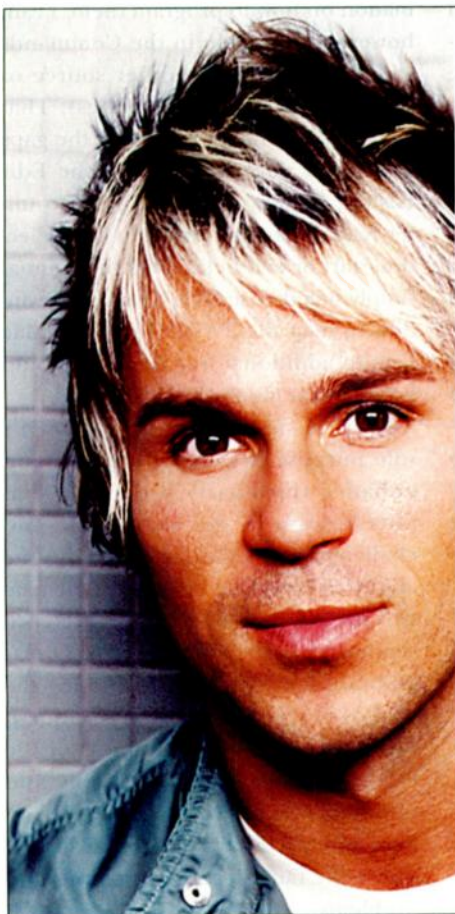
In DP, the FW-1884 can drop loop and punch-in points and change automation modes and standard transport and channel functions. The implementation for Sonar appears to be similar. The Logic implementation is deeper and more complex.

MIDI Control mode allows nearly all

of the FW-1884's physical controllers to become assignable MIDI controllers. You can program their assignments using the FW-1884's control software, which is accessed through the Control Panel shortcut button prominently placed on the top panel. Programming a number of MIDI controllers is tedious with any system, but it's not difficult on the FW-1884.

In Monitor Mix mode, the 18 analog and digital inputs are returned through the control surface's faders and mixed to analog outputs 1 and 2. The mix can also be routed to the S/PDIF and ADAT outputs. That mode is convenient for no-latency monitoring when you're recording into a DAW. Monitor mixing is a standalone function that lets you use the FW-1884 without having to connect the computer.

Once again, though, the documentation was confusing: the manual mentions that DAW audio is also mixed into the monitor mix, but it says nothing further, which left me sussing out how the routing and mixing worked. In addition,



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Tascam's Application Guide states that audio from the DAW can be mixed in the FW-1884 along with other inputs, such as an outboard reverb, and bused back to the DAW to be bounced to disk; there is, however, no way to bus the FW-1884's monitor mix back to the computer. Perhaps technical issues ruled out this feature, but it is a missed opportunity. You can mix 18 inputs down to 2, but you can't route that mix into the computer, which, for instance, precludes submixing a number of live drum mics down to a smaller number of DAW tracks.

FURTHER INVESTIGATION

The FW-1884 has a mechanically solid, well-thought-out set of controls. It has the necessary hardware for a clean look and an intuitive feel at a good price, while providing sufficiently deep control to fulfill the device's *raison d'être*. The trick is making deeper features accessible without digging through multiple levels of software, which is especially imperative since the FW-1884 lacks a display. Tascam performed well in that area: there are second-level functions for many buttons and controls, but it takes no more than one extra keystroke to access them.

One area that is lacking in good functionality is metering. A pair of 12-segment LED ladders can display the monitor bus output levels, but I'd rather meter individual channel inputs. Another disappointing feature was the lack of ability to locate markers in DP after you dropped them. I can control the transport, arm tracks, and drop punch or loop points from the FW-1884, but I had to use the computer to locate markers. Of course, nonsequential locating capabilities would require a 10-key pad, which is another feature that I missed.

The FW-1884 achieves ease of use and efficiency in part by not being overly ambitious in scope. In day-to-day operations with the FW-1884, you will still frequently use the keyboard and mouse, making their placement important. Although some operations, such as microediting automation data, are best performed with a keyboard and mouse, my preference is to do virtually all of my transport

and location functions, track-record arming, and automation control without taking my hands away from the control surface. The FW-1884 does pretty well in that area, but it did not allow me to make time selections for editing, which caused me to have to switch back and forth between the control surface and the keyboard and mouse.

I could continue listing loose ends that I would have liked to see tied up (for example, the FW-1884 has a single-level Undo button while DP has unlimited Undo capability), but it is obvious that some compromises were necessary to keep the product affordable.

The DP applications notes mention using the aux 5 through 8 buttons as programmable keys, in conjunction with DP's Remote Controls window, to access functions not addressed by the FW-1884's dedicated controls. Aside from the fact that DP's Commands window replaced the Remote Controls window in version 3 a while ago, I expected that the programmable keys would be programmable. But there is no information on how to program them. I can, however, map them in the Commands window just like any other source of Mac keystrokes (or MIDI notes). That capability let me plug a few of the gaps I'd found, such as opening the Edit History window or grabbing the counter readout and copying it to DP's selection start or end fields. Had the manual simply stated "Use DP's Commands window to map the FW-1884's virtual Mac keys to additional functions," it would have been a much clearer process.

Keep in mind that the FW-1884's sole purpose is to integrate with and enhance third-party products. That puts Tascam in the unenviable and challenging position of providing the ability to interface with different control protocols and accommodate each supported DAW's idiosyncrasies. I don't question the difficulty of following the lead of other companies in this quest, but in the end, the usefulness of the FW-1884 hinges on how deeply and smoothly it works with your DAW software and MIDI hardware, regardless of where the fault lies for limitations and problems.

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The FW-1884 is a good value and offers a well-rounded package of functionality. The A/D/A converters are of good quality, as they are on many recent audio products. The FW-1884's small footprint is ideal for studios in which space is a premium. The software is generally intuitive and easy to use (with a few minor exceptions), and the only genuine bugs I found were trivial. The multiport MIDI interface is basic but convenient, and it integrated easily with my MOTU MTP/AV MIDI interfaces.

I encountered my greatest difficulties with the FW-1884 as a result of missing or unclear information in the documentation. I've mentioned some examples, but I repeatedly encountered problems that were resolved once I either figured them out on my own or tech support provided undocumented information. For instance, although the DP applications notes mentioned assign-

ing the FW-1884's master fader to various DP faders, the document never told me that unless the DP session had a master fader, the FW-1884's master fader would stay all



**Monitor mixing lets
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the way down, effectively muting the FW-1884's stereo output. As soon as I put a master fader into the session, it was linked to the FW-1884's and worked nicely.

Before you purchase the FW-1884, be certain that it performs the functions that you want it to. Define your expectations, and then ask your dealer to demonstrate

features or ask Tascam to explain them. Do not rely on the written materials to give you the whole story.

The documentation problems had a real impact on my experience with the FW-1884. As a result, I had to do a lot of detective work and tail chasing. The good news is that documentation problems should be the easiest for Tascam to fix. Even if the manual isn't rewritten (which would be the best solution), supplying more thorough application notes could help to minimize head-scratching and unhappy surprises.

Tascam has assembled a well-balanced and much-needed set of functions in a compact device at an affordable price. The FW-1884 is a product for its times and will meet the needs of many individuals who are trying to establish better control of their DAW-based studios.

Larry the O has been reviewing products for EM for a very long time.



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Quick Picks

DAVE SMITH INSTRUMENTS

Poly Evolver

By Geary Yellon

When Dave Smith Instruments introduced the Evolver, it was the first affordable synthesizer that successfully combined analog and digital oscillators and filters. Its fat sound and innovative architecture scored high marks that put it in a league of its own (see EM's June 2003 review at www.emusician.com). World-class inventor Dave Smith, indisputably one of the leading innovators in musical instrument design (originator of the Prophet-5, vector synthesis, the first commercial soft synth, and the MIDI protocol) has followed up the monophonic Evolver with a rackmount 4-voice version called the Poly Evolver (\$1,495).

Hello, Poly

The Poly's predecessor, the Evolver, provides two identical signal paths leading to a stereo output. Each path has a real analog oscillator, a Prophet VS-style digital wavetable oscillator, an analog resonant lowpass filter, and a digital highpass filter. You can modulate any of 75 destinations with 24 sources that include three ADSR generators, four LFOs, and a 4-track-by-16-step analog-style sequencer. The Evolver can process external audio or internally generated signals with delay and various forms of distortion.

The Poly Evolver, with 16 oscillators, 4 noise generators, 16 filters, 12 ADSR generators, 16 LFOs, and 4 independent 4-track sequencers, is the Evolver multiplied by four in virtually every aspect. New

features include a revised user interface, more signal-routing options, key-gated sequences, and the ability to increase polyphony by chaining the Poly with an Evolver or additional Polys.

On the Poly's rear panel are two outputs for each of the four voices; two outputs carrying all four voices (Audio Output); an input that routes external audio to the synthesis engine (Audio Input); and an input that simply mixes external audio with the main output (Mix Input, which is useful when chaining synths). Using the individual voice outs removes those voices from the Audio Output, allowing you to process one voice with another by routing its outputs to the Audio Input. All ins and outs are unbalanced 1/4-inch TS jacks. Also on the rear are MIDI In, Out, and Thru ports.

Unlike the 3-digit LED, rows of buttons, and matrix-style programming of the earlier Evolver, the Poly's front panel has a 2-by-16 alphanumeric LCD, 11 dedicated buttons, and 2 reassignable infinite-rotation knobs. Also unlike the Evolver, the Poly thankfully has a power switch, a volume knob, and a 1/4-inch stereo headphone jack. You access patches and parameter pages by scrolling with Page Up and -Down buttons and by turning the knobs to change whatever values appear in the display.

For feedback that's more visual, the Poly includes SoundTower Software's PolyEvolver SoundEditor (Mac/Win), an application supplied on CD-ROM and authorized online with your Poly's serial number. Along with the usual editor/librarian functions, the program lets you transfer 16-bit user waveforms to the Poly's digital oscillators. Unfortunately, the only documentation is online, and it doesn't go beyond explaining setup.

Good Golly, It's Poly

Program and Combo modes correspond to monotimbral and multitimbral operation. In Program mode, all four voices play the same sound. In Combo mode, a patch can layer

Programs, split the keyboard, play one Program after another, or play each Program on a separate MIDI channel under sequencer control. The Poly provides four banks of 128 Programs and three banks of 128 Combos. The factory patches do an excellent job of showing off the Poly's talents.

When you sit down at the keyboard and scroll through the presets, you'll instantly recognize that the Poly has a sound all its own. Although the Evolver is sonically quite complex, the Poly multiplies that complexity exponentially. Many sounds are so overwhelmingly multifaceted that you'd be hard-pressed to fit them into a mix; rather, you'll want to build a song around them instead of adding them to preexisting tracks (see **Web Clip 1**). Nonetheless, there are plenty of exceptions—sounds that fit perfectly wherever you need obviously electronic timbres.

Poly Finale

The Poly Evolver could be the thickest, fattest-sounding synth I've ever heard. Conversely, it can also generate sounds of amazing delicacy (see **Web Clip 2**). Its sheer number of oscillators and filters, combined with its extensive modulation and signal-routing capabilities, make it possible to create sounds that no other synth module can. If you want to emulate traditional instruments or even re-create the sound of most other synths, you should look elsewhere. But if you want to stand apart from the crowd and make sounds that unmistakably cry out, "I play a Poly Evolver," then this is the only instrument for you.

Overall EM Rating (1 through 5): 4.5

Dave Smith Instruments

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METASONIX

TX-1 Agonizer

By Gino Robair

Metasonix threw down the noise gauntlet when it printed on the box of the TX-1 Agonizer (\$499) "Don't buy this thing. It's too horrible." Oh yeah? I know horrible noise—I'll take that challenge.



Dave Smith Instruments' Poly Evolver is a 4-voice rackmount version of the Evolver. Combining analog and digital sound engines, it offers four times the sound-generation and sound-manipulation capabilities of the original and adds various new features.

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The Metasonix TX-1 Agonizer misuses obscure, new-old-stock tubes for meta-musical purposes.

The TX-1 is an analog synth module that incorporates a pair of obscure new-old-stock (NOS) tubes—a 12AU6 and a 13Z10—to create a waveshaper supreme. According to the manual, the harshness of the TX-1 is due to the nonlinear quality of the 13Z10, and the misuse of the tube's beam modulator in particular. (Metasonix notes that this "bizarre tube defines poor fidelity," and I agree.)

The Agony

The TX-1 has three unbalanced 1/4-inch jacks (an audio input, an audio output, and a 10V peak-to-peak CV input), and four knobs (Level, Pound, Strangle, Grind). The manual suggests keeping Level, which acts as the input gain control, in the lowest range to get the nastiest sound. When the knob is in the 9:00 range, however, the result is more of a device-generated hum than nastiness.

Sonically, Strangle does what the name implies: at the highest setting, it chokes off the sound—particularly the hum and original tone as if it is fully shortening the duty cycle of a square wave. The Grind knob controls a feedback loop that creates instability in the beam modulator.

The CV input can be used to control the Pound circuit, which adds further complexity to the distortion. A typical CV with a 10V range can be sent to this jack, and I found the most interesting results using the signal from an envelope generator (in this case, a Blacet EG2070 VC ADSR module). In fact, depending on the setting of the TX-1 and the Blacet mod-

ule, I could control the TX-1's internally created tones using the EG's Attack and Decay controls—ah, the joys of analog synthesis.

Unlike other Metasonix devices, the TX-1 includes both a power switch and a bypass switch. Once you hit the power switch, you have to wait a few seconds for the tubes to warm up before you can start working. But before you hit the bypass switch, make sure your monitors are turned down, because the TX-1 will substantially increase the output level of your source sound. The level was strong enough that my volume pedal couldn't cut it out entirely.

The Ecstasy

Although I don't agree with the claim that the TX-1 sounds horrible, the processing could be best described as severe: the TX-1 can obliterate any sound going through it. The resulting distortion isn't the light, sweet kind you get from a typical fuzz box. Rather, it's thick and intense and threatens to explode (see **Web Clips 1 and 2**). And when you go too far, the sound either chokes out or disappears into an annoying hum. I often wound up with a speaker-ripping pulse-wave sound that would destroy a monitor if turned up too loud. Dangerous? Yes.

The TX-1 worked best with line-level source material that was harmonically rich to begin with (electronic percussion and nasty synth tones being the best). By design, its overall behavior is unpredictable. For example, the controls don't change the sound in a linear way: as you turn a knob, the sound may begin to break up nicely, then clear up a bit, then break up in a different way. But if you think having Level, Pound, Strangle, and Grind at their maximum settings will give you the noisiest, most intense sound, guess again.

Metasonix recently revised the design of the TX-1. Besides a change in a couple of resistors that yields greater saturation, the TX-1 Special Edition adds a switchable highpass filter into the circuit, referred to as Suckbass.

In Extremis

Both in price and in design, Metasonix makes a bold statement that the TX-1 is not for everyone. To get the point across, the product's Web page and manual are filled with invective

meant to scare off potential consumers who, according to Metasonix, may not—to put it charitably—understand the full potential of the TX-1. For example, when introducing the Pound CV input, Metasonix explains that "only extreme synthesists and sociopaths will understand what it means." That's as polite as it gets.

But there's nothing polite about the sound of the TX-1. If you think you've heard it all, guess again. For truly rough and messed up sounds, the TX-1 Agonizer **EMWEB** moves to the front of the line. **CLIPS**

Overall EM Rating (1 through 5): 3.5

Metasonix

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EVENTIDE

Octavox (Mac)

By Nick Peck

Eventide has released Octavox (\$595), a TDM plug-in that brings the diatonic pitch-shifting algorithms of their hardware processors to the world of Pro Tools. Octavox is a processor-hungry, high-end plug-in that will run under OS X with Pro Tools HD or HD Accel or under OS 9 with Pro Tools HD (a Windows version is due in November 2004). The maximum-supported sampling rate under Pro Tools HD is 48 kHz, and 96 kHz is supported under HD Accel.

Octavox is an 8-voice harmonizer/delay with intelligent pitch analysis. The plug-in allows you to specify a diatonic key and



Eventide's Octavox plug-in brings notation-based pitch shifting to Pro Tools TDM for Macintosh.

mode that it will try to follow in creating a musical harmony for the input signal. Though Octavox is useful for creating traditional harmonies, it excels at creating subtle, strange, or wild delay and pitch-based effects as well. Its interface is a paragon of simplicity and elegance—without cracking the manual, I was creating weird and twisted sounds right away.

Find Your Voice

Each of the eight voices has an identical set of parameters, which include level, mute, pan, delay time, delay feedback, and pitch. Pitch can be specified by interval (which then follows the diatonic key and selected scale) or in cents, which results in a fixed pitch offset from the input material. Delay time tops out at 2.4 seconds.

Octavox's Notation window lets you adjust pitch and delay in musical terms. Instead of typing in numbers, you can adjust a voice's pitch up and down on a grand staff. Delays can be specified in terms of beats by moving the horizontal position of the voice across the bar. You can specify a tempo and meter or simply slave to Pro Tools' current session tempo. The Notation window also lets you set the master tuning, key, and scale for the diatonic pitch shifter. Scales include all the standard modes used in Western harmony, plus a few interesting additions like the Neapolitan, Hungarian, and Enigmatic scales.

Like Eventide Reverb, Octavox sports a snapshot pane. This handy 16-button area allows you to store 32 frequently referenced patches that can be called up in one or two button clicks. Input and output sliders with meters, a wet/dry mix slider, and a global-pitch setup area complete the plug-in's controls.

Now Hear This

If you approach Octavox with the thought that it will turn your solo vocal into a sound worthy of the Everly Brothers, The Beatles, or Crosby, Stills and Nash, you are in for some disappointment. Vocal formants are fixed frequency elements of the human voice and are a primary component of a voice's particular timbre. Most real-time pitch shifters vary the pitch of the vocal formants along with the rest of the voice's harmonics. That results in an unnatural, artificial voice sound, resembling chipmunks when pitched up and monsters when pitched down. Listen to **Web Clip 1** on the EM Web site for an



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example. Eventide's Orville hardware processor has enough DSP to preserve vocal formants through its Ultrashifter algorithm, resulting in a more-realistic voice pitch shifter. Ultrashifter is not included in the Octavox plug-in, though.

Nonetheless, the heart of Eventide pitch shifting is alive and well in Octavox. I've always loved their micro-pitch shifting, which is perfect for creating a wide, lush guitar or backing vocal sound. Octave and fifth pitch shifts are also effective elements to add to a guitar sound, bringing a 12-string- or sitar-type vibe to the instrument. Check **Web Clip 2** at the EM Web site for an example of both effects.

Octavox also excels at creating delay-based special effects. I started with a snare drum playing a New Orleansesque shuffle, then applied a couple of voices delayed in quarter-note increments pitched above and below the original snare drum. The resulting symphony of snare drums is a wild and weird percussion odyssey. See **Web Clip 3** at the EM Web site.

Octavox is one more in a series of useful and interesting plug-ins from Eventide. The user interface is first rate, particularly the Notation window, and the sound is 100 percent Eventide. Using Octavox to create vocal harmonies didn't do it for me—the munchkinization effect of most real-time pitch shifters rings false to this human ear. But Octavox's shifting sounded great on guitar and other instruments, and its notation-based delay effects are truly wonderful. When looking for a tool to spice up a musical **EMWEB** track, Octavox would be on my **CLIPS** short list.

Overall EM Rating (1 through 5): 4

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ELECTRO-HARMONIX

16 Second Digital Delay

By Myles Boisen

Anyone who has ever gotten misty eyed over vintage stompboxes is bound to shed tears of joy over the return of the legendary Electro-Harmonix 16 Second Delay (16SD)

looping pedal (\$995). The radical real-time sound-shaping controls of the original pedal have made it a performance favorite of pioneering guitarists like Bill Frisell, Nels Cline, and others.

In this limited production reissue, the look and the basic functions of the original have been preserved. Meanwhile, the internal circuitry has been updated, resulting in better specs. Vintage units are rare and highly sought after, and many people may not be familiar with the pedal's unique features.

Floor Board

The 16SD is a large stompbox with a trio of ¼-inch input, output, and footswitch jacks positioned along the angled front edge of the chassis. Three slider switches that select loop mode (Continuous or Single mode), pitch and tempo adjustments, and forward or reverse playback share this angled panel. The unit's 9 VDC wall-wart power transformer also connects here.

The bulk of the top-panel face is taken up by a series of white miniature faders with white position markers screened on a black background. These panel markings, set in increments of 25 percent, allow some degree of repeat programmability. A pair of Delay faders, with marks indicating loop bar lengths, control coarse and fine tempo or pitch adjustment. Two Sweep faders govern pitch modulation speed and depth.

In the central Mix section, five faders control feedback, "clix" (metronome clicks) level, effect-out level, dry-output level, and input gain. Empty slots to the right of the Mix section provide ventilation for the internal digital delay engine.

The lower edge of the top panel has three heavy-duty footswitches to initiate record, play, and bypass functions. LED meters also dot the panel, indicating record and play status, input level, loop-tuning status, and metronome clicks.

One of the major improvements to the 16SD is that it's no longer just 16 seconds! The Electro-Harmonix reissue now provides over four minutes of loop recording time. Though a full description of the unit's varied features and functions exceeds the limits of this review, some of the more impressive features include: 1-octave pitch change up or down (in half-step increments); the ability to change tempo without changing pitch; uninterrupted reverse playback; true hardwired bypass; and reten-

tion of the loop data in memory after the pedal is powered down.

In addition to its main role as a looping pedal, the device can also perform standard time-based delay effects such as echo, flanging, and chorus. The reissue includes a MIDI Out port and generates MIDI clock, -start, and -stop commands as a MIDI master only. (It will not slave to an external MIDI clock.) An optional footswitch, which costs \$166 and was not included with our review unit, provides the capability to control record, play, and bypass functions remotely.

Several of the 16SD's features are impressive. It's no "one trick" device, and a wealth of switch combinations and looping modes are all explained in tutorial style in the clearly written manual. The half-step pitch modulation of the fine delay slider has numerous musical uses, including quick sample or loop tuning.

For live experimentation, the 16SD is hours of fun, with extreme modulation effects available at your fingertips. The unit's digital processing yielded rich fidelity from an

assortment of electric guitars. I detected a mildly darker coloration and noticeable lack of air (above 10 kHz) in the pedal's processed signal, but the loops I created never sounded thin or degraded appreciably over time.

Delay Gratification

Although there is no need to get nostalgic over the antiquated delay technology of the original 16 Second pedal, one innovation of the reissue—its beats-and-bars-based system—may not be applauded by everyone. The mandatory four-beat count-in before recording is great for studio layering, but may be a hindrance to the spontaneity of live jams.

While the pedal's case is of all-metal construction, the plastic switches and ¼-inch jacks are not the sturdiest choice for an onstage pedal with multiple foot-operated switches. In addition, the top slider knobs are plastic, and particularly vulnerable to breakage. As if to illustrate this point, three of the nine sliders broke off when the device took a tumble from my desk onto a carpeted floor.

At \$995 list (street prices are significantly lower), the 16 Second Delay reissue is a seri-



The revamped and reissued Electro-Harmonix 16 Second Delay now provides over four minutes of loop recording time in its jumbo stompbox case.

ous toy that promises a lot of loopy fun. For guitar experimentalists, it's practically a must-have; for studio types, the 16SD's potential for sample manipulation, overdubbed looping, and all manner of sonic wizardry is as unlimited as the imagination. ☺

Overall EM Rating (1 through 5): 4

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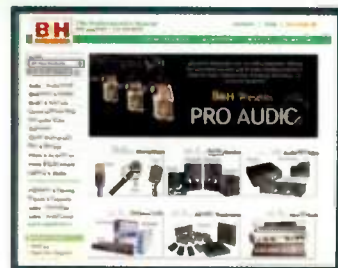
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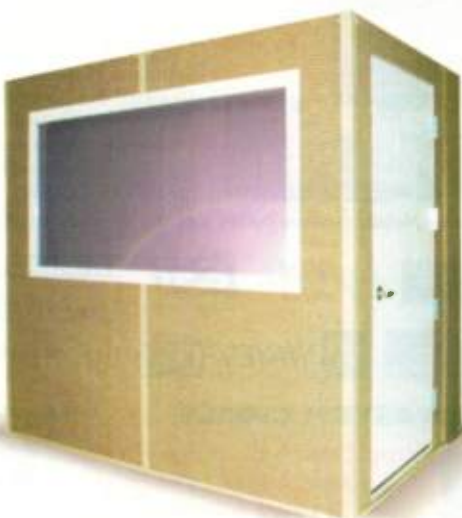
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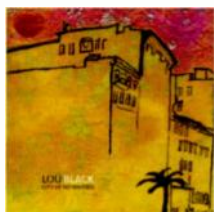
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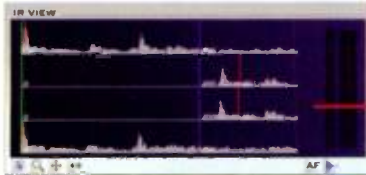
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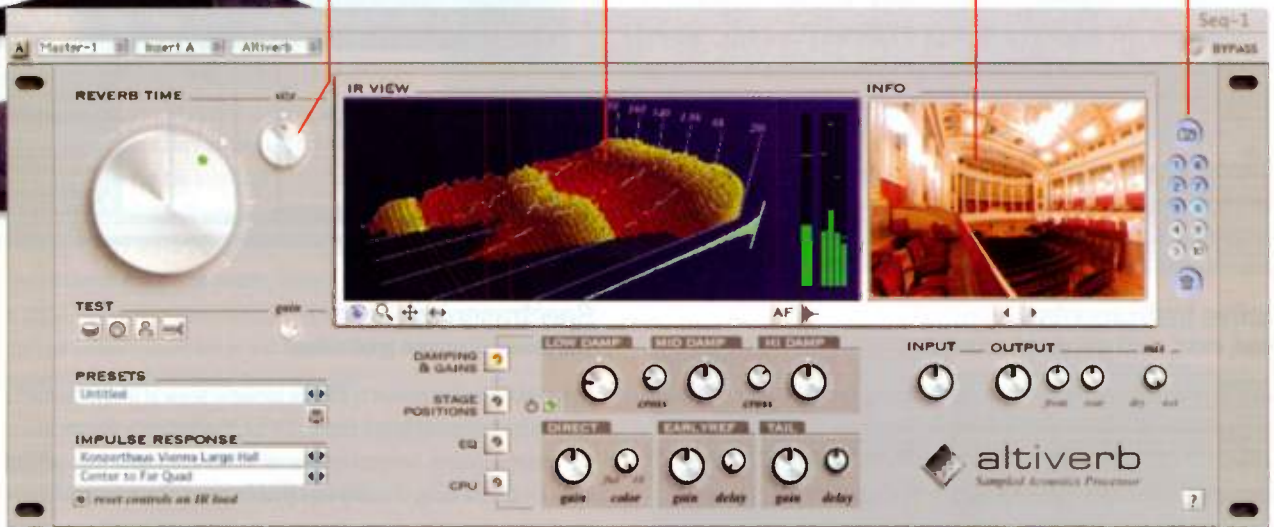


The size parameter shifts the frequency behavior of a room while adjusting reverb times.

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Game Over

In mid 2003, I left the video-game industry after working for eight years as a senior sound designer for a couple of major, um, "players." At the time, I thought I had a decent understanding of the industry, but I was so close to things that I didn't fully trust my perceptions. I was angry, I was bitter, and I was viciously critical. A year and a half later, however, after reflecting on my experiences and observing what's happened in game sound since I moved to a different sector of the audio industry, I feel even more strongly about my beliefs than I did when I left.

What bothers me is the work environment promulgated by the game companies. There are, of course, a number of reasons for it, but it seems to me there is a fundamental underlying conflict in the video-game industry. Video games are an entertainment product, meaning that shipping products for Christmas is crucial to a predominant portion of annual revenues. But the product is software, which cannot be forced to obey deadlines—Christmas or any other—no matter how skilled and experienced a developer may be. That doesn't mean a software product can never ship on time, only that it cannot be forced to ship on time if there is a quality standard in place. (Of course, it's easier if you are willing to ship seriously buggy code.)

The standard game-industry management strategy for resolving this paradox and attempting to meet the schedule is to put the entire load on the backs of the development team and impose impossible deadlines. "You'll make it because you have to" works sometimes, on a small scale, but not regularly or on a large scale. Yet I have seen company management in denial about project schedules far beyond anything I thought possible.

When I entered the industry in 1995, there were typically four to six weeks of "crunch time" (meaning 60- to 100-hour weeks) in the development cycle leading up to the release date. The E3 show (Electronic Entertainment Expo) came along and added another three to six weeks of crunch in the spring because developers needed products to display at the show. Projects grew

in scope, and production values rose, but development schedules did not expand even close to proportionally. The crunches grew toward each other until, when I left the industry in 2003, I was doing seven to nine months of continuous crunch in which a mere 60-hour week was a rare luxury.

What kind of life is that? None at all: no social life, no intellectual life, no love life, no spiritual life—not even the time to do laundry. The game companies bring in food and provide all sorts of amenities, such as on-site gyms and shower facilities, so that workers never really need to leave. And indeed, they don't leave: I can't tell you how many times I stood at a programmer's cubicle and heard him bidding his young children good night over the phone.

Under this sort of pressure, marriages and relationships crumble along with emotional well-being and physical health. People burn out and leave or are shown the door, but it doesn't matter to their employers because there are plenty of young people just getting out of school who need experience, have energy to burn, and work cheaply. In short, more cannon fodder is always available. And that is viewed as an acceptable way to do business and handle staff! "A curse on your heartless ways," say I!

The situation is reminiscent of the work environment that brought about labor laws in the first place. I suppose that it must be legal, but I can't figure out how. One colleague used to call it "white-collar indentured servitude." I don't think the situation can continue this way forever, but I suspect it will take some major unfortunate incident to bring about change.

My experiences in game sound left me with emotional scars that I'm still dealing with. Since I left the game industry, many of my former colleagues also have bailed out in anger and bitterness. If you are in the game industry and love it, more power to you. If you thrive on all work and no play (and precious little rest), it's all yours. But if you have the slightest shred of interest in maintaining any balance in your life, be warned. ☹

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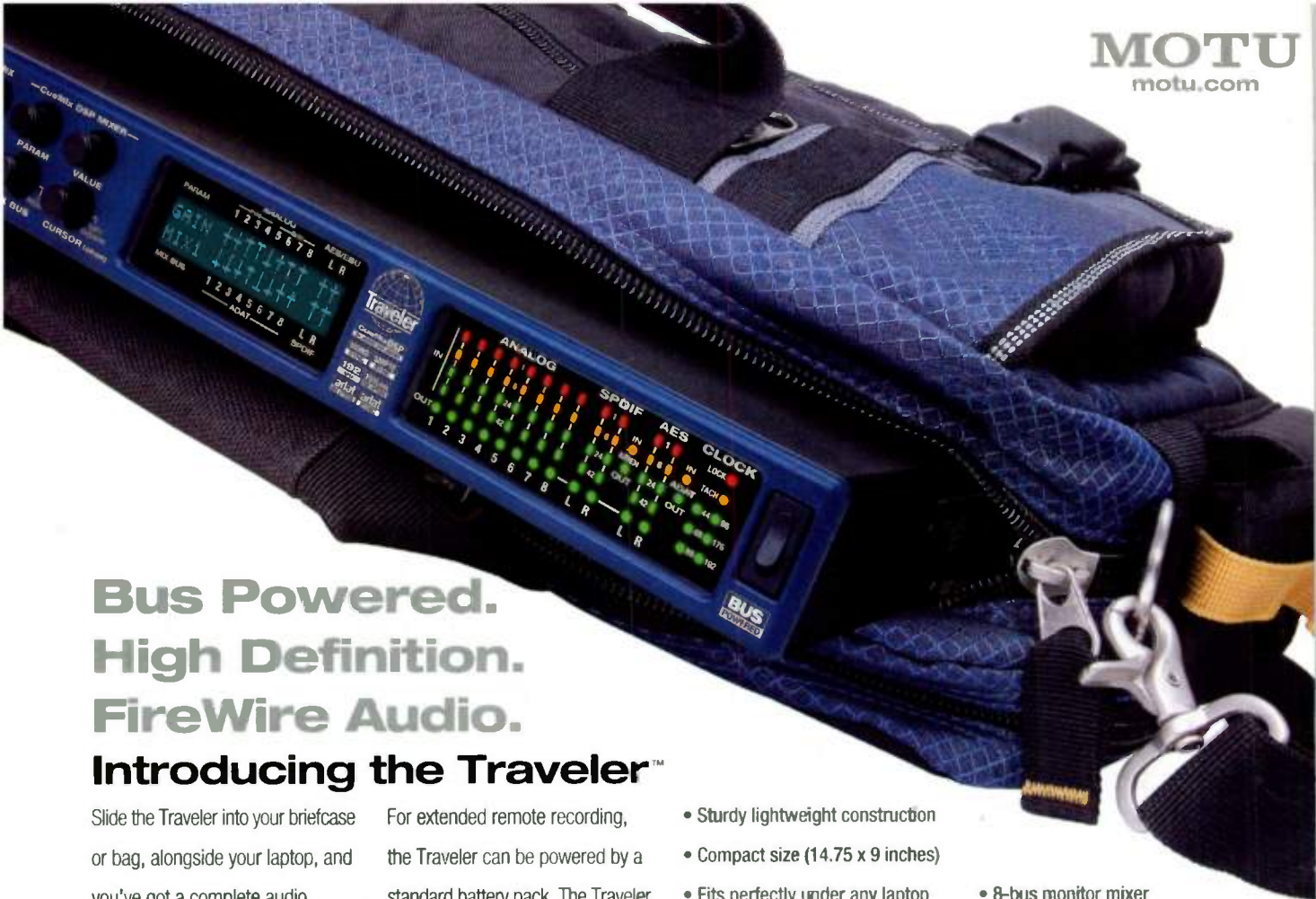


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