

EQ

Defining
the Future
of Recording

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PREVIEW
Digidesign
Digi 002 Rack

New Directions in MIXING

**GUITAR RECORDING
IN THE DIGITAL WORLD**

ANTARES AUTO-TUNE
HOT TIPS!

17 products reviewed!

MOTU PCI I/O Series

RPx400

ous Mixing System

World Radio History



CMP

World Radio History

JULY 2003

Beck

George Jones

Johnny Mathis

Lloyd Cole

Tracy Chapman

Aimee Mann

Carly Simon

The Thorns

Dave Matthews Band

Diana Krall

Jack Johnson

Jason Mraz

Norah Jones

Tony Bennett

Joe Jackson

Tom Petty

Ben Harper

Roseanne Cash



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- Create filter effects
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- The best level control available

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 14 day demo available at your waves dealer or at WWW.WAVES.COM



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Ed Cherney has engineered for some of the biggest music artists of the last two decades – and is still going at it. Cherney's engineering credits are literally a Who's Who of the music industry: Jackson Browne, Eric Clapton, Bob Dylan, The Judds, Bette Midler, Iggy Pop, Bonnie Raitt and The Rolling Stones – to name only a few.

World-renowned producer **Don Was** has worked with Ed on numerous projects over their long and prolific partnership. Was has produced an impressive number of major recording artists including The B-52's, Barenaked Ladies, Bob Dylan, Elton John, B.B. King, Willie Nelson, Randy Newman, Bonnie Raitt and The Rolling Stones.


When it comes to choosing the right mic for their Grammy winning work, the Audio-Technica 40 Series tops the list. "My **AT4060's** have great body and warmth and still give me the clarity and presence I want," says Ed. "I put up a 4060 and everyone is happy – the artist, me, everyone."

Take an "insider's" tip from one of the music industry's most successful A-teams, and try a 40 Series mic on your next session. Who knows? You might just be making musical history – like they have.

Special thanks to The Record Plant, Hollywood, CA



(40) SERIES

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World Radio History

Talk Box



PRO FOOLS

It's no surprise Digidesign has been making headlines lately. With Pro Tools 6 running on OS X, the XP version achieving parity with the Mac, and the recently announced 002 Rack (see page 88), they've stirred up more buzz than an unshielded guitar cord. What is surprising, though, is the backlash against not just Pro Tools (whose visibility gets it the most heat), but DAWs in general, due to a stupefying lack of understanding regarding how technology interacts with the creative process.

A few well-established musicians have told me they believe Pro Tools has ruined the record industry by "empowering the talentless." A recent *Rolling Stone* article only made matters worse. The high-profile feature put the Pro Tools success story front and center, deservedly so, but it also gave readers the skewed perception that practically anyone with an Mbox and a guitar can produce a radio-ready CD in minutes. What they glossed over in their case study was the fact that producer *extraordinaire* Butch Vig saved the author/amateur musician days of time and years of experience by applying his immense production chops and knowledge of PT to the 3.5-hour test session. Hello?

Others have accused Pro Tools of turning today's studios into sterile labs that are devoid of live performance and collaboration. Burt Jones of Mediastar Productions countered this myth in a recent Musicplayer.com forum post: "The person who blames Pro Tools for musicians not playing together [in the studio] is full of crap. I record live musicians every day with Pro Tools — all playing together just as they would if I was recording to 2" tape. Only difference is that the new media is a lot better." Right on, Burt.

When word processors came along, they blew the keys off typewriters in terms of speed and convenience. But did that mean novels written in WordStar were any less credible than typed manuscripts? And now, by the same token, are great songs with catchy melodies and clever chord progressions any less valid because they were crafted in Pro Tools? I think not.

To the folks who prefer all-analog recording gear, cheers to you. Make wonderful music with it! After all, it's the result, not the method, that matters most. And to the anti-tech flamethrowers or those looking for an easy path to fame, the simple truth is that Pro Tools or any other modern DAW, slick as they are, won't write a hit song for you. A well-functioning, creative brain is still required.

—Greg Rule

The BAND STAND

What feature would you like to see added to DAWs?



**Greg Rule,
Executive Editor**

Acceptance of a universal plug-in format (à la MIDI). One size fits all. Mac or PC. Wouldn't that be great? On the Mac side, things are looking a bit brighter with news of Emagic and MOTU's adoption of the AU standard, for example, but Utopia remains a distant destination.



**Mitch Gallagher,
Editor**

My wish isn't for a specific feature; it's for a complete re-think of the concept . . . is the virtual tape recorder/mixer model the only one that works? How about something new that addresses audio production as conceptually elastic, without structure or boundaries.



**Craig Anderton,
Editor at Large**

I'd like a built-in tuning-standard tone generator (not just a tuner, like Sonar has) with note, octave, and level, as well as a menu for output bus assignment. Need a quick tuning check for guitar? Dial up an E, dump the signal to your main stereo bus, and turn up the level.



**John Krogh,
Technical Editor**

I'd like an integrated "loop station" where I could work with REX, Acidized WAV, and sliced-up MIDI-triggerable samples and apply and extract groove quantization to/from the MIDI and audio files. Add to this synthesis capabilities and you'd have a monster.



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United Business Media

Lean, Mean, Mixing Machine

The New O1V96 Digital Mixing Console From Yamaha



Despite its deceptively small footprint, the new O1V96 digital mixer delivers features most computer recording controllers can only dream about...

- > 40 channels of 24-bit/96kHz performance
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- > 4 internal effect processors with 32-bit precision
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- > On-board digital patchbay
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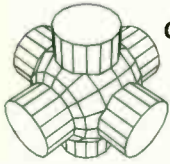


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30th
Anniversary
Mix With the Best
PM Consoles Since 1972
Digital Consoles Since 1987

Punch-In

Tips & News You Can Use
BY THE EQ STAFF



Gadgetphile

New Apple iPods Mixes to Go

San Francisco's Moscone Center was the site of Apple's highly publicized music press event last May, and it did not disappoint. Steve Jobs made headline news by rolling out the new iTunes Music Store. Could this finally be the post-Napster music model that the ailing record industry has been looking for? Considering the million songs that were snapped up during its first week in business, it could very well be. (See Surfboard, page 8, for more.)

But that wasn't all the buzz at the Apple shindig. Jobs also announced that Apple's iPod has become the most successful portable MP3 player in the world, with sales of over 700,000 units. That number is bound to grow significantly with the debut of three new iPods that are sleeker and sexier: 10GB (\$299), 15GB (\$399), and 30GB (\$499). And, indeed, orders for over 110,000 new iPods poured in during the first week of sales.

Compatible with both Macs and PCs, the new backlit iPods feature solid-state "no moving parts" navigation buttons and wheel, a new dock with audio out for fast connection to your computer or stereo, and more. A 30GB iPod is said to store approximately 7,500 songs. (www.apple.com)



tip

DUAL PROCESSING SYSTEMS: ENABLING/DISABLING IN CUBASE SX

With some plug-ins and VST instruments, it may be necessary to disable multiprocessing in Cubase SX. Here's how.

- Go *Devices > Device Setup*.
- Select *VST Multitrack*.
- Under the *Setup* tab, click on *Expert*.
- The multiprocessing parameter check box is in the lower left corner (see inset; shown in yellow for clarity). Click to enable, click again to disable.
- Click on *OK*, click on *OK* again for the *Device Setup* window, and you're done.

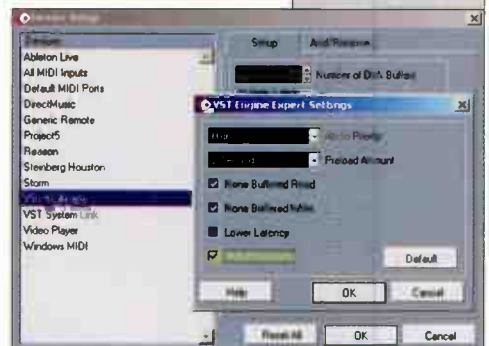
News

Sony Buys Sonic Foundry

On May 2, Sonic Foundry agreed to sell its desktop software products and related assets to Sony Corporation's Sony Pictures Digital for \$18 million, which may be good news for fans of Sound Forge, Acid, Vegas, and other SF software apps. The infusion of cash from Sony will allow Sonic Foundry to pay its debts, restructure, and get back to the business of software innovation. (www.sonicfoundry.com; source: yahooofinance.com)



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DUAL PROCESSING SYSTEMS: VERIFYING IN WINDOWS XP

To make sure Windows XP recognizes that you're using dual processors:

- Open the Task Manager by hitting *Ctrl-Alt-Del*.
- Click on the Performance tab.

You should see two graphs under "CPU usage History."

- If you do not see two graphs, there are three likely reasons.

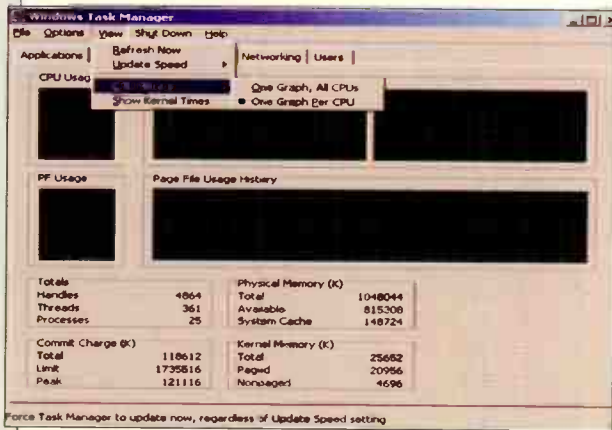
1. You are using Windows XP Home instead of Windows XP Professional. The former does not recognize dual processors, the latter does.

2. There is a problem with the motherboard.

3. View is not set correctly.

- On the Windows Task Manager screen, go *View > CPU History > One Graph per CPU*. If *One Graph, All CPUs* is selected, you will not see the two graphs.

This monitor shows the amount of processor load at any given moment. You may find this monitor more useful than the CPU usage meters included with various software programs as it shows what's happening with your total system, not just a particular program.



Upgrade Alert!

You've upgraded your program to the latest revision, and you're enjoying the cool new features. So you think maybe it's time to sell that Version 1.0 you're not using any more. But before you do, check your software's license agreement, because selling that old version might forfeit your rights for future updates. This is because with many pieces of software (including popular programs such as Reason 2.5, shown above), all of your upgrade license numbers originate from your original license. If you don't keep your old license number, then your license isn't complete. Upgrades are not a separate program license, but a continuation of your original license.

In many cases there's no problem with selling your original program if you don't plan to use it or its upgrades any more. But don't forget to give the buyer all your license numbers, CDs, and manuals so the new owner can have be eligible for future upgrades, etc. Appealing to the company won't help, because if someone claims they have a software license and can prove ownership, then they're the legitimate owner — not only in the eyes of the company, but the eyes of the law. And while you're at it, keep a copy of the license numbers for all your software in a safe place, like a safe deposit box. In case it gets lost or damaged companies are often willing to go the extra mile for legitimate customers, but you'll need proof.



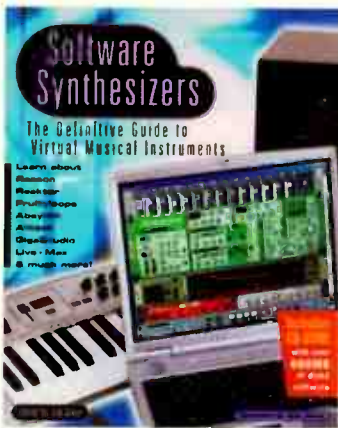
CD of the Month Spy Mob

Sitting Around Keeping Score,
Arista Records

Spy Mob's debut is a solid collection of cleverly written pop songs and hooks galore. With more than a nod to such hitmakers as Stevie Wonder and Steely Dan, this release manages the warmth and fun-filled vibe of all those great '70s records, while maintaining a sure footing in modern rock. We caught up with engineer and tone master Alex Oana, one of the record's producers, to learn a bit more about the recording process. "The songs I produced and engineered were recorded on an API Legacy, with Neve 1064, API 212, and Telefunken preamps, frequently using an 1176, entirely onto 2" with a staggering amount of track sharing to fit all our overdubs on tape." In contrast, for their recording of "Still Live at Home," "Spy Mob used [Digidesign] 001 and Pro Tools TDM rigs at their rehearsal space, my studio, and Seedy Underbelly [Minneapolis, MN]." To hear Spy Mob in action, visit www.spymob.com, and for more on Oana, check out www.alexoana.com.

Bookworms

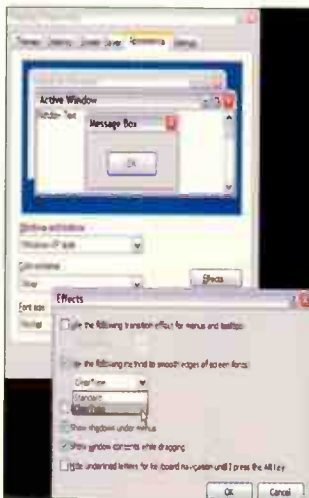
Renowned tech writer/reviewer Jim Aikin has penned a timely new paperback called *Software Synthesizers — The Definitive Guide to Virtual Musical Instruments*. Now in bookstores and available for order online (www.backbeatbooks.com), the 290-page book gives you a guided tour of the hottest software instruments and plug-ins, and provides clear, concise explanations of the latest synthesis techniques. A companion CD-ROM is included.



I CAN SEE CLEARLY NOW

You bought yourself one of those cool LCD screens for your music computer, you're probably really happy to save desktop space, draw less power, generate less heat, and reduce blurriness. But if you're running Windows XP, a little-known feature called ClearType can make your LCD even more readable.

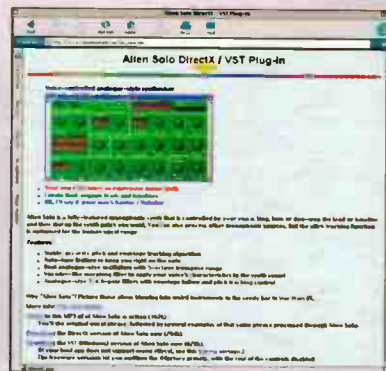
To activate ClearType, go *Start > Settings > Control Panel*, and double-click on the *Display* icon. When the *Display Properties* window appears, click on the *Appearance* tab. Click on *Effects*, then check the box *Use the following method to smooth edges of screen fonts*. Use the drop-down menu to replace *Standard* with *ClearType*, and click *OK*. You'll drop back to the *Display Properties* window; click on *Apply*. Whoa! Even really small type at high screen resolutions (e.g., 1280 x 1024 pixels) is far more readable. Make this tweak, and you'll never go back to the standard setting again!



Surfboard

As we peruse the inner recesses, nooks, and crannies of the web, we're constantly flagging sites, news items, and useful tidbits that we feel will be of interest to you. Such as:

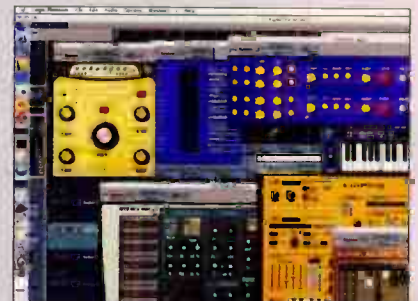
■ **Apple iTunes Music Store.** Apple has secured over 200,000 songs (and growing) from the Big Five record conglomerates for sale on their new online music store. Download Apple's new iTunes 4 software for free from www.apple.com, and you'll find a portal into the store. From there you can audition any song by double-clicking it. If you like what you hear, click the Buy button and it's yours for .99 cents per song. No tethering — the song is yours to burn. All songs on the site are encoded Dolby's high-quality AAC MP3 format. Currently the Apple Store is only set up to do U.S.-based transactions, and just for Mac users. But international support will come soon — PC support by the end of the year.



■ **Free synths from Sweetwater.** Alien Solo for PC is a full-featured monophonic synth that's controlled by your voice. Sing, hum, or doo-wop the lead or bassline, then dial up the synth patch you want. You can also process other monophonic sources, but the pitch-tracking function is optimized for the human vocal range. Get your copy at www.sweetwater.com/click/c24/b833. For Mac users: The

ReFX Claw is a free, monophonic VST synthesizer that's ideal for pulsating basses, cutting leads, and more. The sound engine is identical to reFX's Beast, but with one oscillator versus Beast's four. Grab one at: www.sweetwater.com/click/c24/b834.

■ **VST for OS X.** OS X users now can fish the deep sea of VST plug-ins with Expansion's new VST-to-Audio Adapter. Once installed, the adapter is invisible to the user — plug-ins reportedly load and behave just like native AudioUnits, reaping the full low-latency benefits of Apple's advanced plug-in architecture. The wrapper is said to drain less than .1% of CPU power per instance on a 550MHz PowerBook G4. Get one now at www.fxpan.com for \$75.



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- Bob YO (mono)
- Brums (mono)
- Brums (mono/stereo)
- Click (mono)
- Compressor Bank CB1 (mono)
- Compressor Bank CB2 (mono)
- Compressor Bank CB3 (mono)
- Compressor Bank CB4 (mono)
- D-Verb (mono)
- D-Verb (mono/stereo)
- Dither (mono)
- Power Dither (mono)
- SurPan (mono/LCRS)
- Pitch (mono)
- Pitch (mono/stereo)
- DrumrGCL (mono)
- DrumrECL (mono)
- Compressor (mono)
- Limiter (mono)
- Expander-Gate (mono)
- Gate (mono)
- DeEsser (mono)
- Echo Farm (mono)
- Echo Farm (mono/stereo)
- 1-Band EQ II (mono)
- 4-Band EQ II (mono)
- FilterBank E2 (mono)
- FilterBank E4 (mono)
- FilterBank E6 (mono)
- FilterBank F1 (mono)
- FilterBank F2 (mono)
- FilterBank F3 (mono)
- FilterBank P2 (mono)
- FilterBank P4 (mono)
- FilterBank P6 (mono)
- FilterBank B1 (mono)
- H d2 1-2Band (mono)
- H d2 4-Band (mono)
- H d2 6-Band (mono)
- H d3 Compressor+Limiter (mono)
- H d3 Compressor/Limiter (mono)
- GRM BandPass (tdm) (mono)
- GRM Comb (tdm) (mono)
- GRM Contrast (mono)
- GRM Delay (tdm) (mono)
- GRM Delay (tdm) (mono/stereo)
- GRM Doppler (tdm) (mono)
- GRM Doppler (tdm) (mono/stereo)
- GRM Equalize (tdm) (mono)
- GRM Freezel (tdm) (mono)
- GRM Freezel (tdm) (mono/stereo)
- GRM FreqShift (tdm) (mono)
- GRM FreqWarp (tdm) (mono)
- GRM PitchAccum (tdm) (mono/stereo)
- GRM PitchAccum (tdm) (mono)
- GRM Reson (tdm) (mono/stereo)
- GRM Reson (tdm) (mono)
- GRM Shuffling (tdm) (mono)
- GRM Shuffling (tdm) (mono/stereo)
- GRM Studio (tdm) (mono)
- H910 Harmonizer (mono)
- H949 Harmonizer (mono)
- HostGain (tdm) (mono)
- Indigo (tdm) (mono)
- Indigo (tdm) (mono/stereo)
- Indigo (tdm) (mono)



Why Pro Tools?

Search for plug-in quality and quantity.



Visit www.digidesign.com/developers/plugin_info to review the family of plug-ins available for Pro Tools 6.

tip

REFRESH YOUR FX

If you've installed any new plug-ins lately and use Cool Edit Pro 2 or Cakewalk VST-DX Adapter, don't forget that you need to refresh the list of effects. For CEP2, with the program open, just go to Effects (from the Menu bar, not the Tab in the left window) and choose Refresh Effects List. For VST-DX Adapter, start the program and keep hitting Next until scanning is complete. Sometimes either program will exit in the middle of a scan, or appear to crash during a scan. Do not panic! Just reload CEP2 or re-scan with VST-DX Adapter. You may need to do this a few times. It seems some companies have plug-ins where for some reason, the scanning software can't "absorb" more than one listing at a time from the same company. So it scans the first instance, but on reaching the next one, aborts the scan. When you re-scan, it has already recognized the first instance, so it can go on to recognize the next one.

News

Did You Know . . . ?

Digidesign's Pro Tools LE 6 contains most of the advances found in the TDM version of PT 6 reviewed in these pages last month. The DigiBase file management system is scaled down a bit and there's no Beat Detective/Groove Conform (but MIDI groove quantize is in there), timecode sync, or MachineControl; other than that, most of the new features are the same.



But there's even more good news for LE users: The software now supports 32 voiceable tracks per session, and a session can contain as many as 128 audio tracks, 128 aux input tracks, 64 master faders, and 256 MIDI tracks. Even better, unvoiced tracks can now be made "inactive," and can remain in the session (previously unvoiceable tracks were removed from the session). In addition, PT LE 6 now has a Time Trimmer tool for time-compressing/expanding a region, there are single-key shortcuts on the QWERTY keyboard for control over editing and playback (Digi calls this "Command Focus"), and QuickTime DV can play through Firewire.

In other Digi news, the company has switched to using the Pace iLok USB dongle (pictured above) for copy protection effective with Pro Tools 6.0 — no more floppy disk authorizations to fool with. The iLok key (called a "Smart Key") holds all the plug-in authorizations; when you launch Pro Tools, it goes out, finds your key in whatever USB port you've plugged it into, and checks for valid software installations. The cool thing is that if you want to work on another system, you can take your iLok with you and have all your authorizations right there.

The iLok copy-protection dongle has been around for a while — I already had three plugged into my system when I received my Pro Tools upgrade. (Yes, this means I have to have a USB hub just for iLoks . . . sigh.) But there's a new twist to the equation: iLok.com. This is a website that allows you to "manage" your iLok key and its contents. You register the key, and the web site looks at what authorizations it contains. You can then view the authorizations. If you have multiple iLoks, you can name them and view their contents individually.

iLok.com also lets you download new authorizations to your key. When I received my copy of the Pro Tools upgrade, Digidesign also provided me with authorizations for a number of plug-ins. I simply went to iLok.com and registered my key. Digidesign then uploaded the authorizations to my account. I went back to iLok.com, downloaded the authorizations to my key, and was instantly in business. All in all, this is a pretty fast and painless way to deal with the never-ending problem of copy protection.

Forum Exchange

EQmag.com Post of the Month

Posted by GY: "A client wanted to try some reverb on the bass guitar while mixing a track. We tried it . . . it sucked. I've heard of others placing some 'verb on the bass. Every time I've tried it it seems to muddy things up and adds too much to the overall level. I figure, if the bass sounds good, rides well in the mix, and serves the song, why screw with it? What's your take?"

Answered by moderator George Massenburg: I can't remember the last time I used artificial reverb on a bass instrument . . . except maybe double basses in an orchestral mix. Electric or acoustic bass? Nope . . . not once.



The Oops File

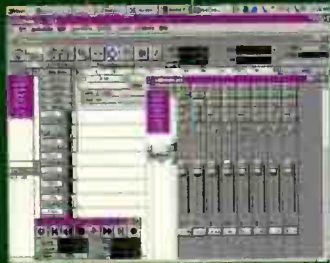
In our coverage of Frankfurt MusikMesse (May 2003), we incorrectly listed Sennheiser's E 609 Silver microphone by its European name (the E 606). We apologize for the mixup.

DM-24 v2.0

The incredibly powerful digital console that doubles as a DAW control surface.

Now the DM-24 does DAWs. Direct control of Pro Tools®, Performer™, Nuendo®, Digital Performer™ and Logic™ via HUI® emulation.

Optional MU-24 meter bridge.



↑ DM-24 does Pro Tools®

16 mic preamps, 15 balanced mic/line inputs on XLR and TRS jacks and 16 inserts.

LED ring encoders for hands on "analog" adjustments of digital parameters.



↑ DM-24 does Performer™

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↑ DM-24 does Nuendo®

HUI® control for Pro Tools®, Performer™ and Nuendo® includes external control of level, muters, pans, track arming and aux sends.

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100mm touch-sensitive motorized faders.

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- 24 TDIF and 8 ADAT channels, stereo S/PDIF and AES I/Cs come standard
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Plus standard MIDI control of Cubase® and Sonar™.

The DM-24's powerful internal DSP and automation frees your computer CPU to run more cool processor-intensive plug-ins.

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V2.1 software adds over 20 new features including 5.1 surround panning and virtually unlimited signal routing.

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PERSONAL
CREATIVITY

Tool Box

BY KEVIN OWENS



MOTU 828MKII Firewire audio interface

The **828MKII (\$795)** is a single-rackspace Firewire interface for Mac and Windows that features 20 inputs, 22 outputs, 24-bit 96 kHz operation, 8-bus monitor mixing with front panel LCD programming, standalone operation, mic/guitar/instrument inputs with preamps and sends, SMPTE timecode sync, and MIDI I/O.

MOTU, www.motu.com.



Big Fish Audio Platinum Essentials Sample library

If you're looking to add some hip to your hip-hop tracks, check out **Platinum Essentials (\$49.95)**, a new audio- and WAV-format sample CD from platinum producer Keith "Clizark" Clark and his partner Luke Most. Platinum Essentials is packed with construction kits, beats, hats, rides, claps, bass, synth samples, and more.

Big Fish, www.bigfishaudio.com.

Apple Final Cut Pro 4 Video editing software

In addition to releasing a handful of other cool products (see the "Punch-in" section, page 6), Apple announced a major upgrade to their Emmy award-winning editing software for film and digital video with the release of **Final Cut Pro 4 (\$999; \$399 upgrade)**. Included among the 300-plus new features are RT Extreme for real-time compositing and effects, new interface customization tools, high-quality 8- and 10-bit uncompressed formats, and full 32-bit floating point per channel video processing. Final Cut Pro 4 also includes three new integrated applications: LiveType for advanced titling, Soundtrack for royalty-free music creation, and Compressor for full-featured batch transcoding.

Apple, www.apple.com.



Buzz Audio SSA-1.1

Mic and instrument preamp

The hand-wired **SSA-1.1** (Stereo Source Amplifier) mic and instrument preamp (**\$1,299**) was designed to bring professional-quality sound to the home and project recording market. The SSA-1.1 utilizes Buzz's class-A front-end design, and features a dedicated instrument interface, as well as independent detented gain controls for its mic and D.I. inputs. Other controls include a switchable 50 Hz highpass filter, soft on/off phantom power, phase reverse, and output mute controls.

Buzz Audio, www.buzzaudio.com.



Real Traps MiniTraps

Acoustic treatment panels

Made with rigid fiberglass and metal instead of foam, **MiniTraps (\$159.99)** are wall-mountable membranes designed to solve low frequency problems in recording studios, editing rooms, and home theaters. The non-flammable panels measure 2x4 feet, are 3-1/4" thick, weigh 16 lbs. each, and can be mounted either vertically or horizontally with one screw or hook.

Real Traps, www.realtraps.com.

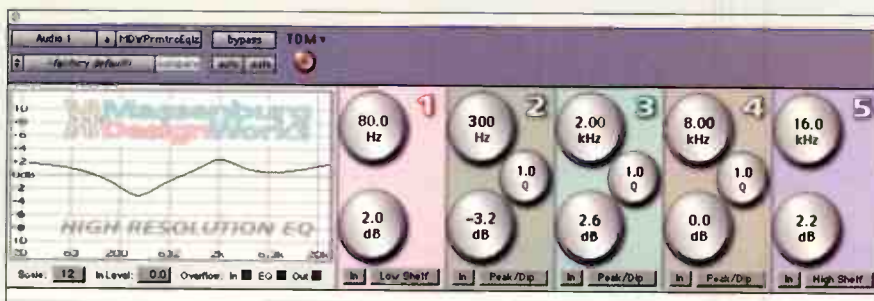




Digital Music Doctor Sonar — Swift & Deep CD-ROM tutorial

Sonar — Swift & Deep (\$29.95) was developed to help both beginners and seasoned veterans alike unlock the power of Cakewalk's flagship product. The tutorial is made up of nine modules that include more than 70 minutes of Macromedia Flash instructional videos, and sample projects that cover all aspects of audio and MIDI recording, editing, loop construction, and mixing using Sonar. *Swift & Deep* requires Sonar 2.0 or higher and Microsoft Internet Explorer 5.5 or higher.

Digital Music Doctor,
www.digitalmusicdoctor.com.



Digidesign Massenburg MDW EQ Parametric EQ plug-in for Pro Tools HD

Digidesign attributes the clarity, smoothness, and excellent high-frequency response of the parametric EQ pioneer George Massenburg-designed **MDW EQ plug-in (\$799)** to its "double precision" 48-bit processing and high-resolution 96 kHz sampling rate processing. Even when working in sessions set to 44.1 or 48 kHz, the MDW EQ processes audio at 88.2 and 96 kHz, respectively, resulting in fewer artifacts and more predictable filter curves. The MDW also features selectable bands, a 10 Hz–41 kHz frequency selection, and a professional interface design.

Digidesign, www.digidesign.com.

MasterWriter Songwriting toolkit

MasterWriter (\$289) is a Mac- and Windows-compatible collection of writing tools for songwriters, poets, and authors that captured a Best of Show award when it was introduced at last January's MacWorld Expo. The application offers a stable of dictionaries that encompass rhymes, sound-alikes, phrases, alliterations, pop-culture, definitions, a thesaurus, a database that lets you keep track of all your lyrics, melodies, and other info, a hard disk recorder, a full-function word processor, more than 250 adjustable MIDI drum loops, and an online date-of-creation song registration service to help you protect your tunes.

MasterWriter, www.masterwriter.com.

Drawmer SP2120 Speaker Protector

The **SP2120 Speaker Protector (\$849)** features a security lock that allows only key holders to make adjustments to maximum volume levels, eliminating the possibility of unauthorized excessive sound pressure levels that can damage your system's chassis drivers and electronics. If the 1U, 2-channel processor receives an increased signal level, a protection circuit is activated that maintains the specified volume level without sacrificing sound quality.

Drawmer, dist. by Transamerica Audio Group, www.transaudiogroup.com.





Jeff Rona, M-Powered.

When you're composing soundtracks for films like "Black Hawk Down", "Traffic" and "Mothman Prophecies" and TV shows like "Homicide: Live on the Street", you need monitors that faithfully reproduce every nuance.

"I choose tools that best help me convert my ideas and imagination into music," says composer Jeff Rona. "That's why I'm using M-Audio's new **Studiophile BX-8** reference monitors. They sound absolutely brilliant—even after an exhausting 18-hour writing day. And what I hear in my studio comes across exactly as I intended, wherever my mixes go."

The Studiophile series—world-class monitors for world-class mixes. Visit your M-Audio dealer and hear for yourself.

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Acoustic Space Control

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Seven Woods Space Station Reverb system

Reverb pioneer Christopher Moore, who in 1977 developed the Ursa Major Space Station, has released the **SST-206 Space Station (\$1,195)** reverb and effects unit. Moore used a 150 MHz 24-bit Motorola DSP chip to "replicate the original Space Station sound, complete with simulation of the 11-bit floating point converters, the 7 kHz bandwidth, and the artifacts of time modulation." The handheld-size (6.4" x 4.8") SST-206 provides AES/EBU digital I/O, accepts 24-bit audio at 48 or 44.1 kHz, and is powered by a small external supply built into the breakout cable.

Seven Woods Audio, www.sevenwoodsaudio.com.

Peavey Color Cue Cables

Color-coded cables

Peavey's new **Color Cue Illuminated and color-coded XLR cables (\$43.99 each)** make it easier to match microphones with their corresponding channels on the mixing board. The phantom-powered Color Cues come in a standard 20' length and are available with red, green, blue, yellow, white, magenta, purple, and orange color lenses that light up when plugged into your mixer.

Peavey,
www.peavey.com.



Serafine Ambience 5.1 Collection

Sound library

Frank Serafine, score composer and sound designer for such blockbusters as *The Hunt for Red October*, *Star Trek: The Movie*, and *Tron*, introduced the **Ambience 5.1 Collection (\$1,999)**, a 20-DVD set of surround sound samples from both natural and city environments. The AIFF and 5.1 DVD audio format library includes the sounds of traffic, rain, waterfalls, forests, wind, neighborhoods, crowds, and more to aesthetically enhance your compositions.

Frank Serafine, www.frankserafine.com.

Introducing Nuendo 2.0 - The professional solution

Nuendo 2.0 forms the core of a complete solution for today's audio professional. Nuendo's superior audio quality is combined with advanced mixing, routing, editing, and networking capabilities as well as professional components such as the new ID Controller, Time Base Synchronizer, 8 I/O 96k AD/DA Convertors, and DTS and Dolby Surround Encoding Plug-ins. A system so scalable - from laptop to installation - the choices are endless.

Nuendo 2.0:

- A new configurable mixer, toolbar, and transport control
- Multiple 12 channel busses for "stem" monitoring up to 10.2
- Multiple output configurations for multiple speaker set-ups
- Plug-in delay compensation throughout entire audio chain
- Flexible routing: any input to any output at any point
- Hyper-threading support for optimum performance
- Automation that moves with the audio data
- Support for Microsoft's WMA Pro (audio and video)
- Multiple time-lines and multiple VST directories
- VST System Link and TCP/IP networking
- Unlimited Rewire 2 channels
- Comprehensive MIDI functionality

Nuendo 2.0

The solution is clear. The choice is now yours.



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US 818.678.5100 - Canada 416.789.7100 More Information on www.steinbergusa.net

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Great River ME-1NV Mic preamp

Based on the legendary Neve 1073, the single-channel **ME-1NV preamp (\$1,499)** was developed to deliver classic "70s vintage sound" at a project studio-friendly price. The desktop ME-1NV features adjustable gain in 5 dB steps up to 60 dB, output gain from -25 to +10 dB, dual metering, balanced XLR I/O, 1/4" -10 dB output, gold plated switching contacts, and a Hi-Z input. Other highlights include custom-wound transformers, and polarity, phantom power, impedance, and output loading switches on the front panel.

Great River Electronics,
www.greatriverelectronics.com.



Gefen PS/2 Extender

The **PS/2 Extender (\$79)** lets you operate your PC's keyboard and mouse from a distance of up to 1000 feet from your CPU. One of the supplied PS/2 cables connects your computer to the sender unit, which connects to the receiver unit via a standard CAT 5 cable, which links to your keyboard and mouse via the other PS/2 cable. The package includes a PS/2 S sender unit, a PS/2 R receiver unit, two 6-foot PA/2 cables, and a 5-volt external power supply.

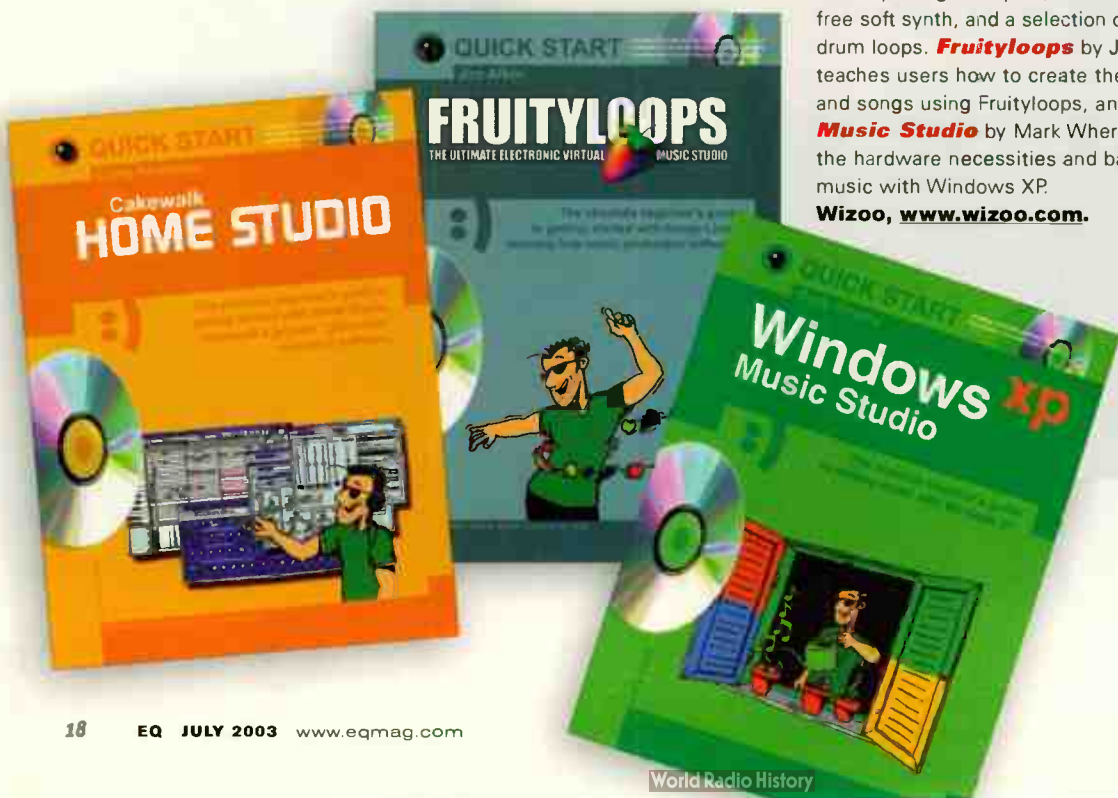
Gefen, www.gefen.com.



Wizoo Quick Start Series Beginners' guides

Wizoo added three new titles to its Quick Start series how-to manuals. **Cakewalk Home Studio (\$14.95)** by Craig Anderton is an entry-level guide to Home Studio that features a CD-ROM chock full of video tutorials, learn-by-doing examples, Cakewalk program demos, a free soft synth, and a selection of exclusive guitar and drum loops. **Fruityloops (\$14.95)** by Jim Aikin teaches users how to create their own sounds, beats, and songs using Fruityloops, and **Windows XP Music Studio (\$19.95)** by Mark Wherry explains the hardware necessities and basics of how to make music with Windows XP.

Wizoo, www.wizoo.com.



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Sweetwater has been the retailer of choice for countless musicians and studio owners for over 20 years, offering great prices and unparalleled customer service.

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NEW DIRECTIONS IN MIXING

By Mitch Gallagher

It

used to be that sitting down to mix your audio was a fairly straightforward process . . . which is not to say it was simple; a great deal of talent and artistry was required. But as far as the actual mechanics were concerned, it wasn't rocket science — you routed audio from your multitrack tape deck into your mixing

console where each track on the deck showed up as a physical channel on the board. Maybe you'd insert compression and EQ on some channels, and you'd probably route some of the channels out to reverbs, delays, and other effects. Beyond those simple procedures, the rest was pretty much up to the ears, brain, and raw talent of the engineer.

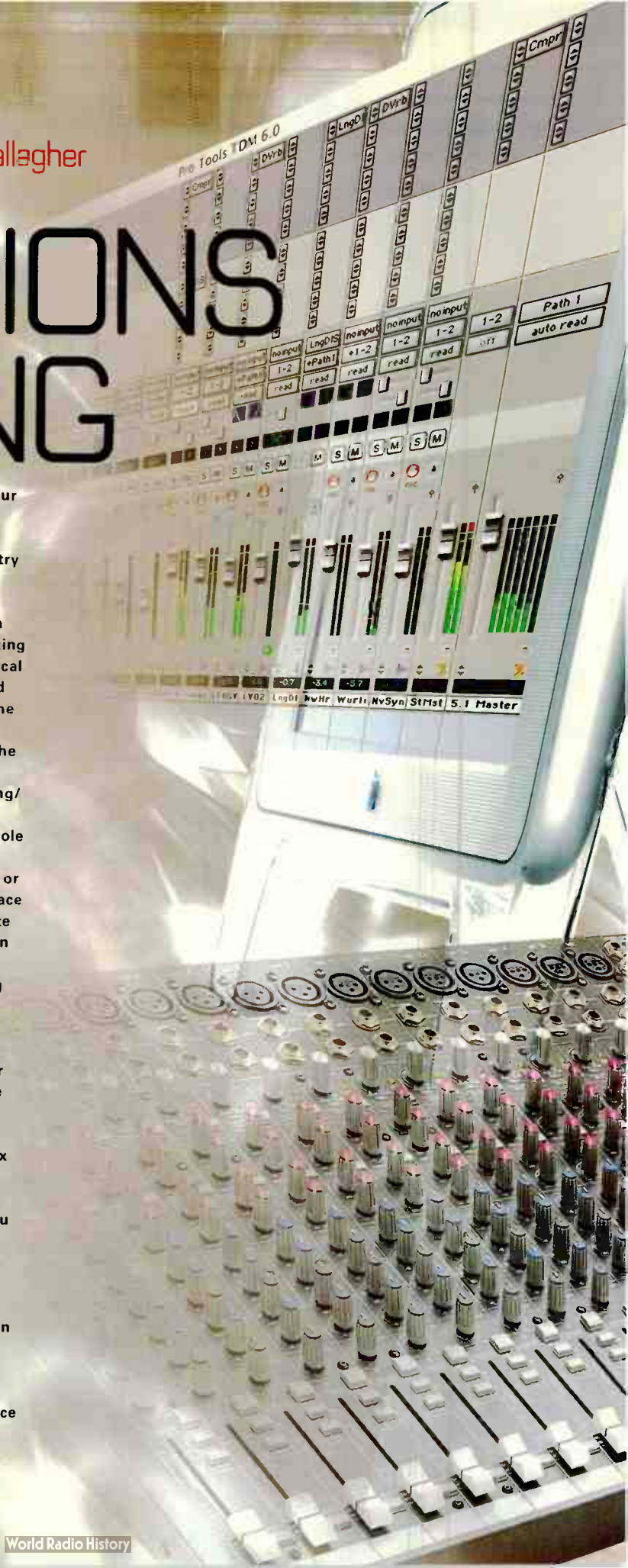
That's all changed. Today we can do all our mixing/routing/processing right inside a computer. Or we can route all the tracks out of the computer through an external mixing console and work the "old-fashioned" way. Or we can submix tracks inside the computer and send them out to a tube "warmer" or small-format analog mixing console. Processing can take place inside the computer using software plug-ins or you can route outside to hardware analog or digital processors. Or, you can use any combination of the above. And we've really just scratched the surface; today the process and tools of mixing can draw from a broad slate of options.

While this has expanded the palette available to mix engineers, it's also caused an escalation of Option Anxiety. Just what tools do you need? How will you accomplish your mix? With a hardware mixer? By doing everything inside the computer? If you do it all "in the box," how do you control monitor levels? What about talkback and headphone feeds? And does an "in the DAW" mix really sound as good as a mix that's summed inside a dedicated hardware mixer?

For this special section, we've set out to answer these questions — or at least provide you with the information you need to answer these questions for yourself, given your unique studio, requirements, and applications.

But keep in mind that when it's all said and done, what's important isn't *how* you do the mix or what *tools* you use. What's important is that the mix conveys the artist's emotion and intent with appropriate fidelity — if your tools (or your anxiety about your tools) are getting in the way of crafting quality mixes, then something is wrong.

A lot has changed in the past few years, but the importance of the mix hasn't diminished. Turn the page, and let's start pushing faders!





Hardware Versus Software Mixing

by Mitch Gallagher

Not long ago you *had* to have a hardware mixer for your studio. There was almost no way around having some sort of console. How else were you going to combine tape decks, microphones, and instruments, route to and from processors and mixdown decks, and access monitor and talkback systems?

Needless to say, today things are different. It's possible to put together an effective studio rig without having to use a hardware mixer — computer-based DAWs provide plenty of mixing power for combining tracks and live inputs along with handling routing to effects (whether plug-ins or hardware) and taking care of monitors.

But even in the largely DAW-centric world we inhabit, the hardware mixer continues to be the centerpiece of many studios. And for good reason: A hardware mixer is a cost-effective way to add a number of essential components to your rig. You can think of it as one big component, or you can think of it as a bunch of mic preamps, a bunch of EQ strips, a monitor control system, a talkback/headphone system, and so on, all combined in one package. A hardware mixer also provides a lot of convenience features: a handy way to easily route signals around your studio, a physical surface for doing mixes (especially if it's a digital board that can also serve as a control surface for your DAW), an easy-to-reach volume knob, and so on.

Going mixer-less — using your DAW as the mixing and routing centerpiece for your rig without using a hardware mixer — also has its benefits. Everything is centralized and under control of the computer. This means that you can instantly save and recall all your setups (a hardware digital mixer can also do this, but doing so in the DAW can be more comprehensive since everything is in one place). It can also be more compact than a mixer, and you can buy exactly as many ins and outs as you need. There's also automation capabilities that go beyond what you find in a hardware mixer.

There is one big issue with using your DAW as your studio's mixer that you must be concerned with: latency. Latency is the time it takes for an audio signal to pass through your DAW system and get back out to where you can hear it. There are a couple of situations where this is a concern: The first is when overdubbing. If you have tracks recorded in your DAW, and want to add another track, say, an acoustic guitar, then any latency you hear when tracking the guitar will screw up your performance. Likewise, if you're combining "live" external hardware synths and samplers with recorded tracks from the DAW, latency may make the synth and sampler tracks appear late in relation to the recorded

tracks. You may also have problems with latency if you're routing tracks from the DAW out to external hardware processors and back into the DAW for mixing — the time it takes for the signal to go out of the DAW, through the processor, and back into the DAW may be long enough to cause an audible delay.

Using a mixer to handle these kinds of situations eliminates the latency issue. But don't give up on DAW mixing yet. Some manufacturers, such as MOTU, Digidesign, Creamware, and others, are using built-in DSP in their DAW hardware to reduce or completely eradicate latency issues.

Do you need a hardware mixer in your studio? The question can be a tough one. Given a certain level of DAW hardware, many of us could probably do away with a hardware mixer. But that doesn't mean that you *should*. There are a lot of issues to be debated before you decide. Consider these questions (among others):

■ **How do you use your studio?** If the sole purpose of your studio is to sequence techno instrumentals using software synths, then a mixer is probably unnecessary for you. If on the other hand, you're tracking bands, a mixer may be a good choice.

■ **What gear do you currently own and use?** If your entire studio is currently analog, then you probably need a mixer. But these days, most studios are hybrids of analog, digital, DAW, and virtual gear. The more external hardware gear you have — preamps, effects, processors, synths, recorders — the more you probably need an external mixer.

■ **Where is your studio going in the future?** Will it be entirely virtual, or will it be a hybrid of virtual and conventional components? The more your studio migrates toward being "in the box" — entirely computer-based — the less you may need an external mixer. But even if everything lives in the computer, there are still reasons to have a mixer or control surface around.

■ **Do you work alone or with others?** If you're working by yourself, it's easier to deal with the routing and configuration issues that may arise with a mixer-less studio. But if you're collaborating with others, need to connect other people's gear into your rig, and so on, a mixer may be more convenient.

■ **Is your studio private or is it open for others to use?** As above, if you work alone, you can set up your studio so it's best for your applications. But if you have clients coming in, then streamlining the rig may be in your best interest. Almost anyone can handle plugging things into a mixer and pushing up faders; in

NEW DIRECTIONS IN MIXING

Hardware Versus Software Mixing

my experience it takes longer to get a neophyte up and running on a mixer-less rig . . . even someone with studio chops.

■ **Do you need to track a lot of microphone inputs at once?** If you're trying to track 24 microphone inputs simultaneously, a hardware mixer can be of tremendous benefit for routing, submixing, and controlling levels. Plus, a hardware mixer generally sports a large number of mic preamps — putting together a mixer-less rig that can handle 24 inputs along with 24 external mic preamps could cost a small fortune.

■ **Are most of your effects and processors analog?** If so, you're going to need a lot of analog ins and outs on your DAW rig — a mixer may be a more cost-effective and easy-to-control means of routing and handling all that external gear. If you're mainly using plug-ins for effects and processing with just a few choice pieces of external analog or digital hardware gear for special applications, routing to and from the DAW makes sense.

■ **Are you mainly using software synths and samplers?** If so, then mixing your virtual/MIDI tracks is better handled in the DAW. If, on the other hand, you have a room full of hardware synths, modules, and samplers, then a hardware mixer is still a good bet. You could outfit your DAW with enough inputs to handle all those sound generators, but then every time you wanted to simply play a keyboard you'd have to boot up your computer.

■ **How are you handling monitor routing and level control?** You can do this from within your DAW; simply grab the output fader that's feeding your monitors and pull it down with the mouse. If you're like me, though, you miss having a physical monitor knob you can reach over and tweak — especially when there's a sudden loud signal or a screaming squeal of feedback! There are small boxes that are essentially the monitor section from a mixer that can handle this job. But if you find that a hardware mixer might be of benefit to you in other ways, the extra advantage of using it for monitor control could tip the balance for you.

■ **Do you have other applications you can use a hardware mixer for?** If your studio doubles as a rehearsal space for your band, or if you rent it out as a rehearsal space, a hardware mixer is almost essential. Yes, you could conceivably plug everyone into your DAW and control the live mix through software, but do you really want to? A mixer is far better suited to this application. Likewise, if you can use the mixer when you're playing live, it makes sense to have one in your arsenal.

■ **Is your recording rig hybrid?** If you're using either analog or digital stand-alone recorders in addition to a DAW, an external hardware mixer makes sense for when you're using the stand-alone recorders. Even if you're using a digital recorder and will later transfer the tracks into your DAW for

high-fidelity microphone preamplifiers by

GRACE

d e s i g n



the model 801

The model 801 and 201 microphone preamplifiers have been the choice of demanding audio professionals around the world since 1995. With hundreds of units in service and countless awards earned, the model 801 and 201 continue to represent the absolute *state of the art* in high-fidelity microphone preamplification.

While both units boast some of the best technical specifications in the industry, the real achievement is that they are, perhaps, the most musical and natural sounding microphone preamps available. The 801 and 201 have the ability to effortlessly resolve low-level ambient information and reveal the *essence* of the source being recorded.

"I take the 201 with me whenever I record out of town. It's been my pre-amp of choice for Acoustic Piano for several years, but I have to leave the 801 at Skywalker because so many other engineers request it."

-Leslie Ann Jones
Director of Music Recording and Scoring, Skywalker Sound




the model 201


for more information about grace design high-fidelity microphone preamplifiers, visit WWW.GRACEDESIGN.COM

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Eminem (over 16 million sold)



Lisa Huang - Engineer
LARW Graduate
"Silk" The Silk Album (Cert. Platinum)
"Gridlock'd -The Soundtrack" (Cert. Gold)



Wassim Zeik - Engineer
LARW Graduate
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NEW DIRECTIONS IN MIXING

Hardware Versus Software Mixing

editing, processing, and/or mixing, during the tracking stage a mixer combined with a stand-alone recorder is more effective than trying to use your DAW as a mixer for the stand-alone recorder — if you're going to do that, you might as well just track into the DAW. One of my favorite ways to work is to track to a stand-alone recorder using a mixer (with or without external preamps), then transfer into a DAW for editing and mixing.

■ **Is latency an issue with your DAW?** As discussed earlier, latency can be a real deal-breaker in trying to go mixer-less. If you deal with live signals combined with recorded tracks and your DAW doesn't have some form of latency compensation, then a hardware mixer is probably essential. If your DAW has some means of latency reduction, then going mixer-less is more feasible.

■ **How were you raised?** If you cut your teeth on mixing consoles, then switching over to DAW/mouse-based mixing can be a frustrating experience — although a good control surface can go a long way toward alleviating this. I recently had the opportunity to review a larger digital console in my studio, and found that getting back to using a real board to mix was a joyous experience. For those who were raised with a mouse in their hand, this may not be an issue.

■ **What about the sound?** Debate continues over the sound quality of DAW signal summing versus hardware mixer (analog or digital) signal summing. See page 30 for more on this, but suffice it to say that some pros prefer to mix using a console, with the DAW serving as tape recorder, processor, and editor. Only your ears can tell you if there's a difference.

These are just a few of the things that you need to consider as you debate whether or not you need a hardware mixer in your studio. It really comes down to how you work, what tools you use, and what goes on in your studio.

Even if you come to the decision that it's time to make the leap into a completely DAW-centric rig, consider that for convenience sake it might be worth having a mixer in your gear arsenal. I've kept a small-format digital mixer in my largely mixer-less studio; currently it serves as a submixer for hardware synths and samplers. But I've not regretted having it around . . . there's always something that comes up where it's easier to simply plug a cable or two into it, push up the fader and get the sound happening than it is to do the same thing in the computer.

While the decision whether to include a mixer or not in your studio can be a tough one, the cool thing is that we now have a choice. The hardware and software is finally there to give us the option to configure our studios in the best possible way for the manner in which we work. And that's a good thing. **EQ**

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4 Case Studios

Mixer vs. Mixer-less Setups

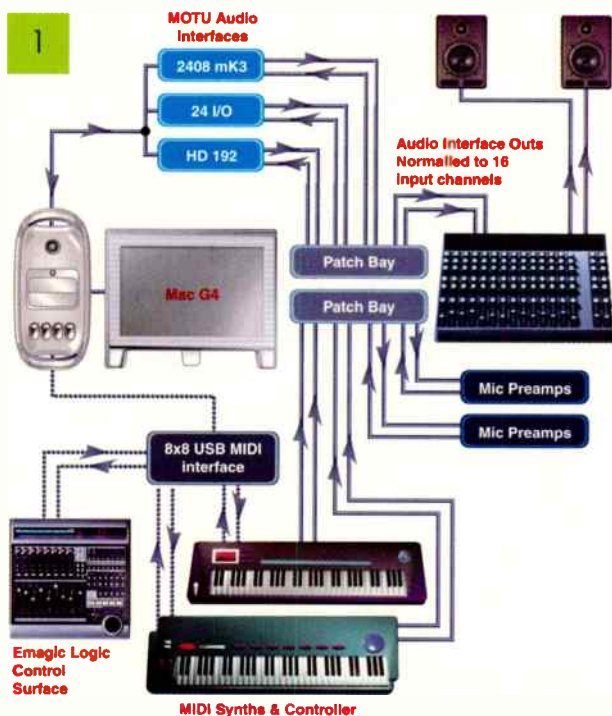
Trying to decide how to approach the mixer vs. mixer-less question in your own studio? Here's how *EQ*'s editors handled the problem . . . four very different approaches, each designed to meet the specific needs of their users.

User-friendly Analog

A year and a half ago I replaced my analog mixer with a digital one. But later, I sold the digital mixer. Why? Because I was using my DAW for effects and automation, so the mixer was only routing and combining digital signals.

I decided to go (essentially) mixer-less. The core of my studio is a MOTU system with a 2408 mk3, 24 I/O, and HD 192. I use the 2408 to digitally patch in my GigaStudio, Alesis Q20, and TC Electronic M2000. With MOTU's CueMix software I can snap analog and digital devices into my setup without latency. This is a huge benefit.

As much as I'm a fan of computer-based recording systems, I still find analog summing to be more user-friendly. That's why I keep a Mackie 16-channel mixer around. I use it primarily to



sum eight stereo subgroups from my computer for mixdown. The Mackie lets me work without having to stop and move into "level management mode" — when I've mixed exclusively in the computer I've inevitably had to stop and deal with adjusting levels so I don't have digital overs. I've spoken to a number of engineers who've had similar results: As tracks pile up, it's

necessary to adjust levels to avoid digital clipping. And this disrupts the creative flow.

Other reasons I keep the Mackie around: While I own four channels of high-quality mic preamps; having the Mackie's mic pres has saved me on occasion. When I need headphone mixes or talkback, the Mackie also comes to the rescue (along with my headphone distribution amplifier).

Everything, including synths and outboard gear, connects to patchbays, with 16 outs from my computer normalled to 16 ins of the mixer. The patchbays allow me to route almost any signal to any device. It's very flexible.

I use an Emagic Logic Control and 8-channel XT expander control surface. This setup has definitely made my mixes more dynamic and creative, thanks to having access to 16 channels simultaneously. There's no way I'd come up with the same mixes if I had to draw all the automation with a mouse. —JOHN KROGH

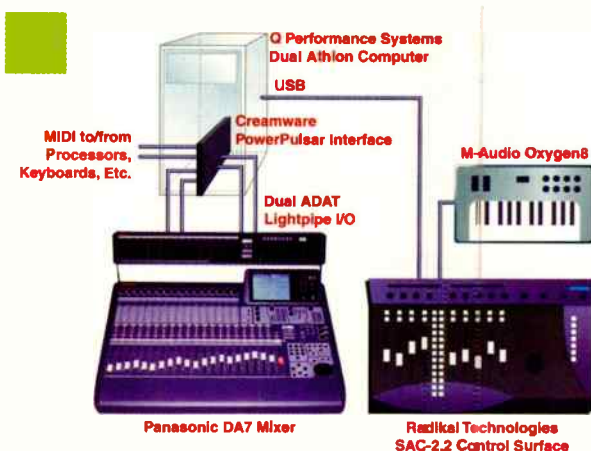
Why My Mixer Matters

I'm definitely not ready to go mixer-less, but that's because my mixer is a digital mixer and does a lot more than just mix.

The heart of my studio is a Q Performance Systems dual-Athlon computer, with a CreamWare PowerPulsar audio interface; its dual ADAT lightpipes connect to a Panasonic DA7 digital mixer. The PowerPulsar also provides MIDI in/out for external gear.

When using my main multitrack applications, I send individual tracks or premixes (e.g., percussion) through the ADAT outs to the DA7 for three main reasons:

- The DA7's EQ sounds smooth as silk, and the dynamics are decent. Offloading these tasks from the computer's CPU frees up power for other functions.
- It's easy to use the DA7's faders to tweak levels, or change several faders at a time (tough to do with a mouse).
- The DA7's aux bus is an ideal place to insert cool vintage analog effects and effects such as reverb, whose plug-in equivalents can be processor hogs.



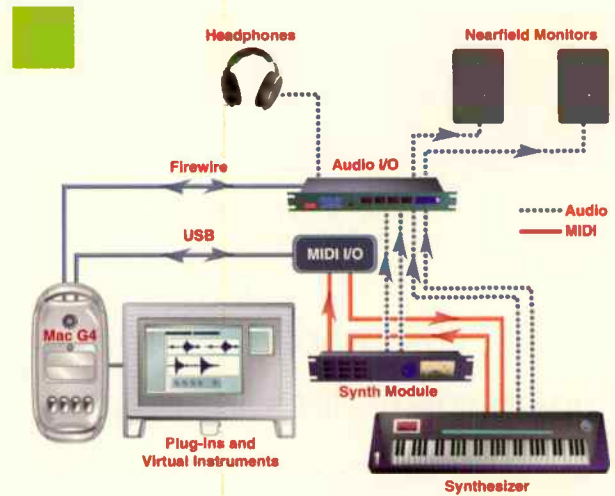
I prefer DAW automation to the DA7's, but as I like hands-on control, the Radikal Technologies SAC-2.2 controller gets a lot of exercise. It also offers excellent integration with Reason, Pulsar, and other software I use.

The DA7's motorized faders aren't wasted, though, because I save all settings for individual tunes as presets. The DA7 can also serve as a general-purpose MIDI control surface, which I usually use for programming outboard MIDI gear. And of course, its converters get signals into the computer via the ADAT I/O, while the outs drive Event powered monitors and an Alesis MasterLink.

Why don't I just use one of PowerPulsar's internal virtual mixers, and control it with the SAC-2.2? I find that using the SAC-2.2/PowerPulsar combo for the "virtual" functions, and the DA7 in a more traditional mixer role helps separate — and thus simplify — the studio's functionality. But if I ever need a more compact setup, I'd seriously consider replacing the DA7 with a PowerPulsar mixer. —CRAIG ANDERTON

Mixer in the Machine

I toggle between two studios — one at home (where I do the majority of work) and one offsite. My mixer-less home setup is so streamlined it's almost embarrassing, but I've cranked out loads of music from this rig and the clients haven't complained yet (knock wood). At home, it's all about quality not quantity, but there are times when I need the bigger room.



At home, I record my synths and line-level instruments directly to Mac. No hardware mixer is used. All instruments are plugged directly into the FireWire audio interface and sent straight to software, where they're tracked, edited, and mixed. Virtual instruments are used extensively as well.

Most processing is done via plug-ins, although I use outboard gear when the need arises. The TC Helicon VoicePrism gets

tangles?



ZSYS

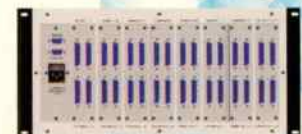
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4 CASE STUDIOS

Mixer vs. Mixer-less Setups

called into service from time to time for vocal treatment (love that "air" algorithm), as does an alternating cast of tube warmers. This approach works for me, as the majority of tracks I produce are either remixes (where a pre-recorded vocal is supplied) or instrumentals.

Having been schooled in analog rooms, I appreciate a hands-on mix, but I don't mind mixing in software. The ability to draw detailed automation is a godsend. I also acknowledge that mousing around a mix isn't the most efficient use of time, so a control surface is on my to-buy list.

"I've made attempts at going mixer-less in the past. While routing everything into the computer works for some things, it was a real time-waster and inspiration-killer to have to (for example) boot up the computer to use it as a mixer so I could noodle on a keyboard."

Often you can find me working in headphones (straight from the audio interface), as the condo I'm in doesn't have the thickest walls. I've found AKG's K240S to be the most comfortable phones, but I also use Sennheiser's HD280 Pros because they sound great and don't leak.

When live tracking is needed, the volume needs to be cranked, or critical mixing is in order, I'll iDisk my files over to another room where a Mackie 8-Bus, a Pro Tools HD rig, a variety of outboard gear, a load of mics, three sets of nearfields, and a 5.1 system await. It's nice to have so many options when mixing.

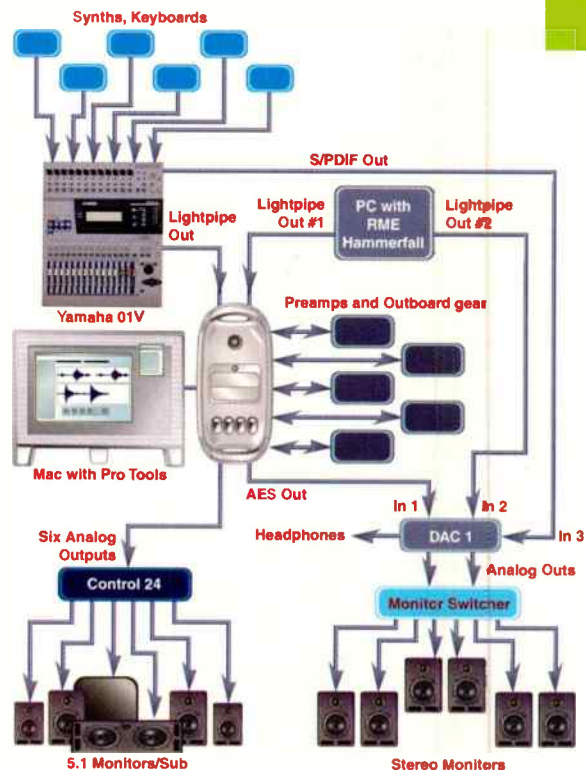
The bottom line: Home is where the heart is. My mixer-less studio is a true comfort zone, and inspires me constantly.

—GREG RULE

Monitoring Mayhem

I've made attempts at going mixer-less in the past. While routing everything into the computer works for some things, it was a real time-waster and inspiration-killer to have to (for example) boot up the computer to use it as a mixer so I could noodle on a keyboard.

I have a dual 1 GHz Mac loaded with Pro Tools HD hardware. It runs Pro Tools, Logic, Reason, Spark, and soon Digital Performer (waiting for the OS X version), among other things. I



also have a PC running Nuendo, GigaStudio, Acid, and other programs; its audio interface is an RME Hammerfall card. All my hardware sound modules and keyboards route into a Yamaha 01V mixer that has an ADAT I/O card.

At various times, I need to listen to the Mac, at others the PC, and sometimes I just want to turn on the 01V and play a keyboard. Often the PC and the 01V need to route into the Pro Tools interface.

I don't use patchbays, so for monitoring the solution has been the Benchmark DAC1 digital-to-analog converter. This box has switchable digital ins (I use one for the Mac, one for the PC, and one for the 01V), as well as a volume control. The DAC1 feeds into a monitor switcher and various pairs of powered monitors. The DAC1 also has headphone outs I use when tracking.

When I need to get the PC into the Mac, I take advantage of the RME card's multiple digital outs; one is always patched into a Pro Tools interface. Same for the 01V; the ADAT out is routed into a Pro Tools interface. I also have a CD/DVD player and Masterlink, and for "legacy" purposes, a DAT machine and cassette deck. I patch them in manually as needed.

For hands-on control, I use a Digidesign/Focusrite Control 24; this also provides surround monitor control. Six analog outs from a Pro Tools interface come into the C24's monitor section. From there the 5.1 outputs feed five full-range monitors and a subwoofer.

An unexpected benefit to this approach is that everything is fed through the same D-to-A converter, so A/B'ing is easier — the D-to-A variable has been removed. —MITCH GALLAGHER EQ

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SOUND AMAZING



The Sum of All Fears

Does your DAW really sound great?

by Mitch Gallagher

Over the years there's been quiet muttering in dark recesses of studios . . . whispered questions about the sound quality of DAWs . . . fearful queries about that dread topic: *summing*.

Far from a topic to be discussed under cloak of darkness, summing is simply the process of combining (mixing) signals. From the dawn of the DAW age, there's been question: Does summing in a computer really sound as good as that done by a mixing console?

There are a ton of factors that figure in, one being how much math is done in the DAW. Every action, whether mixing two signals, changing a channel's level, panning a channel, whatever, requires calculations that may impact the quality. According to some, if you simply bring two signals in, mix them at unity gain, and send them back out, there's going to be impact on the signal due to the way in which computers handle dither and binary addition.

This has made some engineers leery of mixing "in the box." Some swore they could tell when a song was mixed in, say, Pro Tools, by the sound quality alone. To counter this, some pros send individual channels (or submixes of channels) to an external mixer to create the final stereo mix. DAW supporters, on the other hand, have countered that when combining digital signals, the mix process shouldn't result in a "sound" — two signals combined in Nuendo should sound like two combined in any other DAW. It is, after all, just two numbers being added together.

Doing a comparison of the sound of DAWs is a daunting task. The problem is eliminating variables when you're dealing with disparate platforms. Lynn Fuston of 3D Audio in Franklin, TN, has undertaken the first stage of this; his results are now available on CD. (You may be familiar with Lynn's mic and mic preamp comparison CDs.)

Called the *Awesome DAW Sum Sampler*, the 2-CD set contains two types of comparison tests, both done with 24-bit, 48 kHz sound files. The first test has 24 tracks being mixed with all faders (including the master) set to unity gain — you should hear only the summing, with no other math applied. In the second test, the individual faders are pulled down 3 dB, while the master is up 3 dB. The same test was done on 29 platforms, including 15 DAWs, five digital mixers (Panasonic, Yamaha, TASCAM, and Sony DMX and Oxford), and five analog mixers (SSL, Trident, Yamaha, Manley, and Dangerous 2-Bus).

Awesome DAW Sum contains the stereo output files from each platform. The files are unidentified; to learn which platform is which file, you go to a hidden page on the 3D Audio site. You're on the honor system: Listen before you look at the answers.

Before listening to the tests, I had my own ideas about DAW summing. While certain that DAW summing resulted in sonic changes, I had my doubts that you could really hear *significant* differences between platforms — enough that you could tell one platform from another in blind listening (given identical conditions). It was also my belief that the difference in DAW "sounds" wasn't near as important as, say, converter, mic, or preamp selection.

Sitting down to compare the files isn't easy. To reduce ear fatigue, I listened in many 15–20 minute sessions over a week. At first, I was hard pressed to hear differences. But with repeated listening and a lot of A/Bing, I started to pick out things. Eventually I was able to fairly reliably pick out certain files when listening blind — the analog mixes were easiest to pick out, although they weren't necessarily the *best* sounding. Interestingly, when A/Bing between two digital files, I was sometimes able to pick one from the other. For example, after much listening, I was able to blindly tell the Sony DMX-100 mix from the Panasonic DA7. With the DAWs, it was harder to "hear" one reliably in blind A/Bing — in fact, a number are numerically identical.

One thing this exercise teaches you: how to listen and evaluate sound. I learned to focus intently on frequency bands in the mix, working my way from bottom to top; next I would focus on stereo image, then clarity, and so on.

So which platform "won" for me? Drum roll . . . *none*. The differences simply weren't *that* pronounced — which says something. However, keep in mind that we're talking about only the most basic aspect of mixing in a DAW. If you factor in multiple fader and pan moves, plug-ins, and other processing, the differences would likely be more audible.

I'll sum (sorry) it up like this: In the end what matters is the results your studio produces, not what you use to get those results. As long as you're happy with the sound quality, then all is well. But educating yourself about your tools is always beneficial. With regard to DAW summing, *Awesome DAW Sum* is a good step in forwarding your knowledge. **EQ**



To learn more about *Awesome DAW Sum* or to order a copy, visit www.3daudioinc.com. The original source tracks (with five-page instructions on how to do the test) can also be downloaded.

To experience the lively discussion this project has generated, visit the 3D site, or musicplayer.com's EQ forums.

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World Radio History

Adding Supported Control Surfaces to DAWs



by Craig Anderton

If you've decided that a mixer-less studio works for you, you may be having second thoughts about giving up the wonderful hands-on, real-time control offered by a hardware mixer . . . not to mention the pure joy of "fader slamming." But you *can* have your cake and eat it too, by adding a hardware control surface to your DAW setup (examples pictured above).

Piloting your DAW with a control surface instead of a mouse can help make sessions flow faster and easier. These are *good* things. You won't necessarily want to give up your mouse — much of the time, you'll likely have one hand on the mouse and the other on the control surface. But there's no denying the relief of watching motorized faders snap to attention as you make your automation moves, rather than tweaking levels one fader at a time with the mouse.

Two Kinds of Support

Most DAWs offer two kinds of control surface support: *generic* and *supported*. Generic means that the software doesn't really know what you're using, so you have to describe its characteristics — how many faders it has, what you want to control with them, and the like. A supported surface will have code within a DAW that takes advantage of a specific feature set. For example, if a control surface has dedicated controls for EQ, the DAW maps its EQ to these controls.

Note that support is up to the DAW manufacturer, not the company that makes the control surface. This is why a general-purpose control surface may support certain functions with one piece of software, and different functions with another. Furthermore, some implementations are better than others. A control surface that's fully supported with one DAW may cover only a few functions with another; however, as most DAW

manufacturers recognize the importance of control surfaces, the trend is to deliver ever-improving implementations.

We also need to differentiate between "basic" control surfaces, which are essentially a collection of faders, knobs, and switches, and "interfacing" control surfaces, which may include mic preamps, audio switching, and other interfacing functions. This article's frame of reference is the basic types, but much of this applies to interfacing types as well.

Better Living Through Emulation

Maybe you've taken a real liking to a certain control surface (we'll call it control surface "X"), only to find that your DAW doesn't support it. Or does it?

Some control surfaces can emulate other ones, which may provide a solution. For example, DAW "A" may not support control surface "X," but does support control surface "Y." If control surface "X" can emulate control surface "Y," then bingo — the DAW and control surface are compatible.

Sometimes you have more than one option, because the DAW will support both "X" and "Y." Which to choose? Try them both, and see which offers better support. Generally if the DAW has some type of "native" control surface — *e.g.*, it's made by the same company that makes the DAW — you're better off emulating it than using some other mode of operation.

Making Connections

Although there are differences among units, most install pretty similarly. You'll want to check the unit's manual and read me files, but the general procedure involves two main tasks: getting the computer to recognize the control surface, then telling the software to use it. ►



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NEW DIRECTIONS IN MIXING

Adding Supported Control Surfaces to DAWs

1. Connect the computer to the control surface via the method it supports (MIDI, USB, FireWire, Ethernet, etc.). If your unit supports more than one protocol, generally MIDI is the least preferred choice.
2. Apply power to the control surface before powering up the computer.
3. Upon booting, you will likely need to install drivers or other

accessory software. As with any hardware device, drivers are updated frequently so check the control surface manufacturer's web site for an updated driver. Installation procedures vary from controller to controller, so pay careful attention to any instructions regarding installation.

4. After installing drivers and re-starting the computer, in most cases you're ready to add the control surface to your software.

However, with USB or FireWire, it may be necessary to unplug and re-plug the connection while the computer is on for the control surface to be recognized.

5. Open your DAW of choice. There will likely be some menu option for specifying a hardware control surface. This is a situation where you really want to look at the DAW's online help to see if there's any specific information regarding the control hardware you plan to use.
6. You'll have to make sure the program you're using recognizes the ports into which the controller is plugged. If MIDI, make sure MIDI is enabled as an input. If USB, there will be virtual ports that you will be able to choose when setting up the host to accept the controller.
7. Finally, there may be an additional operation inside your host, such as choosing the controller you plan to use from a list of controllers.

At this point, your controller's faders should mirror the settings of the onscreen faders. If not, there's a connection or driver problem, or perhaps some aspect of using a control surface is not enabled in the host.

If there's any sort of toolbar, menu item, or icon that corresponds to your controller, it may offer further options, such as additional tips, the ability to switch "pages" on the controller, etc.

Fader Away

If you've read this far, you're obviously into the concept of control surfaces. So here's the most important thing you need to know:

Control surfaces have a learning curve.

Yes, they're physical devices, and you need to develop physical dexterity to "play" them correctly. This involves knowing where the controls are, and what parameters they affect (most control surfaces use bank-switching, so a limited number of faders can do the job of many).

A control surface becomes beneficial only when using it is second nature — and it can take weeks for that to happen. But overall, the learning process is well worth it. **EQ**



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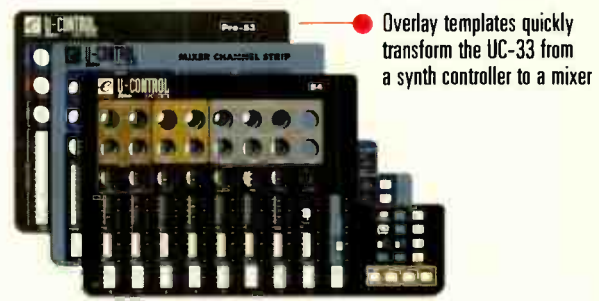
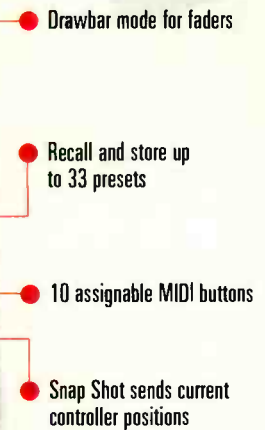
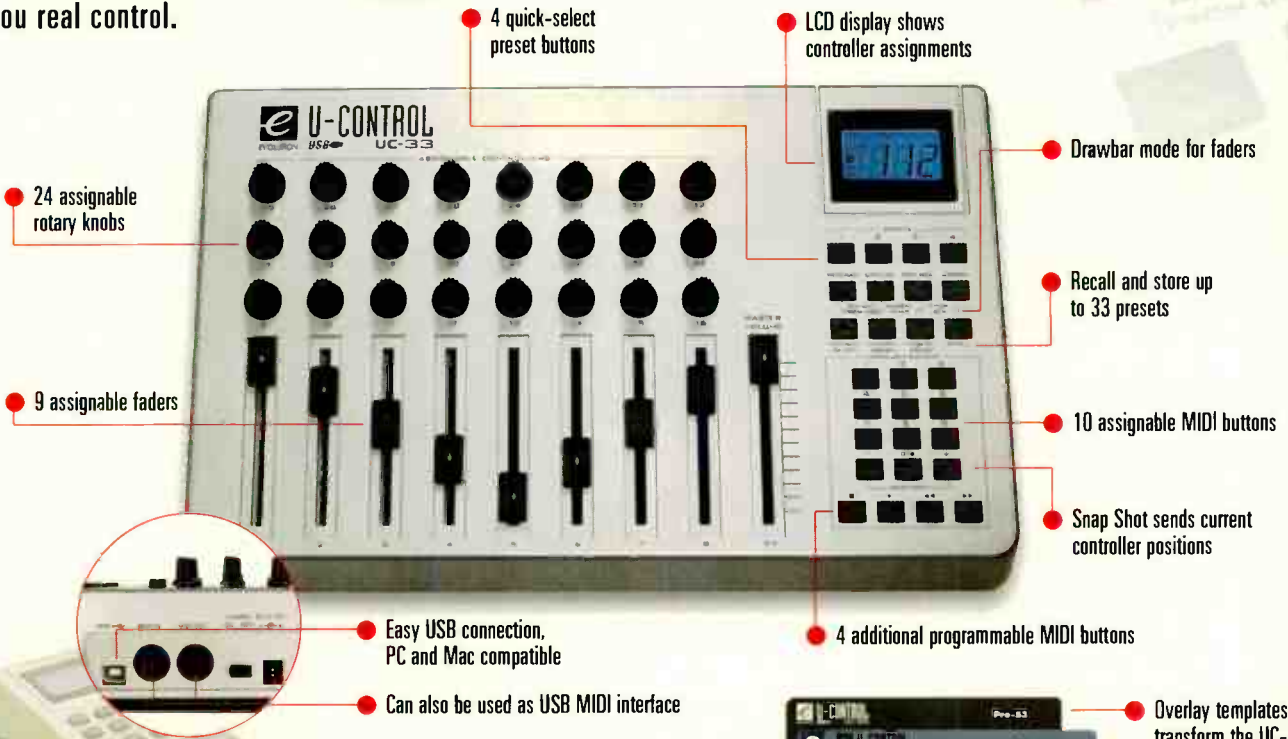
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Let's face facts: Guitarists tend to be a conservative bunch. We hear 30-year-old riffs being recycled in today's "new" music, and instead of having a musical generation gap, today's guitarists still revere guitar heroes like Jimi Hendrix.

Part of this is because those recycled riffs are still pretty cool, and Jimi Hendrix's work hasn't lost its brilliance over the years. But bubbling beneath the surface, some guitarists are taking advantage of today's new "techno tools." Players like David Torn, Adrian Belew, Jerry McPherson, and Reeves Gabrels have carved out significant niches for themselves by stretching beyond the norm to discover new sonic territories. I can vouch for the effectiveness of modern technology; for example, Roger Linn's groundbreaking AdrenaLinn processor allows my guitar to fit like a glove with electronica-oriented dance music.

Hard disk-based sequencing has also changed the rules. You can quantize guitar parts, drive soft synths via MIDI, enjoy new types of distortion thanks to plug-ins, and create convincing guitar voicings in MIDI sequencers (all of which, by the way, are covered in this issue). But there's more. Computers are fast enough that it's possible to play through plug-ins in real time, and re-amping has become a natural part of the recording process — record your guitar quickly while the inspiration is fresh, then while mixing, add plug-ins to fine-tune your sound.

Okay, so MIDI guitar never set the world on fire. But it continues its slow, steady course, picking up new converts as they delve into this largely virgin territory. Guitar modeling (e.g., the Roland VG-8 and its descendants), once hailed as a breakthrough, is now accepted as just another tool. Few guitarists take advantage of the exceptional realtime control options available in today's signal processors, and DigiTech's innovative RPx400 (reviewed for the first time in this issue) has a tough task ahead:

convincing guitarists that recording shouldn't be separate from playing. That seems obvious, but it's hard to understand just how profound a concept this is until you actually plug into it and start playing.

The bottom line is that there are a lot of unexploited possibilities for today's technology-savvy guitar player, and this special focus is about exploring some of them. But don't spread the word around *too* much, okay? It's

a real temptation to keep some of these secrets to ourselves! —Craig Anderton



MIDI GUITAR MEETS THE VOICE OF REASON

PROPELLERHEAD'S REASON BREATHES NEW LIFE INTO MIDI GUITAR

by Jerry McPherson

When MIDI guitar controllers were introduced, the reality didn't match the hype. But times have changed, technology has improved, and thanks to hard disk recording, many guitarists are computer-savvy and have jumped on the techno bandwagon with a vengeance.

And now because of virtual synths, you don't need a huge rack to go MIDI. If you have a MIDI guitar or converter, a fast computer with plenty of memory, and a MIDI interface for your computer, you are ready to rock!

One of the best programs I've found for MIDI is also one of the coolest programs in the universe: Propellerhead Software's Reason. But wait — isn't it all-in-one studio software? Yes, but it's also a fantastic customizable synth rack that's an ideal companion for MIDI guitar.

THE REASON — CONTROLLER MATING RITUAL

Boot up Reason, and hook your MIDFied guitar into your computer. We'll set up

Reason so we can route each guitar string to its own MIDI channel, and therefore, its own instrument.

Start with an empty rack (if your rack has modules, click on each module, then type Ctrl-Del; also delete the sequencer tracks that correspond to existing modules). Under *Edit > Preferences*, go to *Advanced MIDI* and assign all four buses (A thru D) to your controller. You can likely choose either your interface, or your MIDI guitar, depending on your setup and whether or not you are using OMS, OS X's Audio MIDI setup, Windows, etc.

Close Preferences, then look at the MIDI In Device strip at the top of the Reason rack. Click on Bus A, and your interface or controller name should appear in the top-most display. Play your MIDI guitar. One or more of the red channel lights should flash, depending on how your guitar is set up.

Here's where we leave conventional keyboard controllers in the dust. Most MIDI guitars can send MIDI notes out over

a single channel, or switch to "mono mode" where each string transmits on a separate MIDI channel (e.g., high E on 1, B on 2, etc.). With your guitar in mono mode, you should see six channel lights turn red when you strum all six strings. Now you can send out individual pitchbend information to each channel, and most important, assign a different sound source and patch to each string.

CREATING A MIDI GUITAR RACK

Let's fill up that empty rack with some guitar-friendly gear.

1. Go to the Create menu and add the Mixer 14:2, then a SubTractor Analog Synthesizer module. Reason automatically routes the SubTractor's audio to the mixer's first input, and the mixer's main outs to the Hardware Interface.
2. Press your computer's Tab key; this swings the rack around so you can verify the connection. Turn the rack back around to the front-panel view.
3. Click on SubTractor's Browse Patch folder icon (to the right of the patch name display) and open the Factory Sounds Pads folder. Load WarmPad.zyp as a starting point.
4. Set the Pitchbend Range value (just above the Pitchbend wheel) to 2. (If you experience pitch inaccuracies while playing, set this to 0 to turn off pitchbend for this patch.) Also set Polyphony to 1, as SubTractor will be assigned to one string only.
5. Go back to the MIDI In Device strip. If your high E string defaults to channel 1 (you'll see the Channel 1 light blink when you play that string), click the downward arrow next to the Channel 1 label, and a small pull-down menu appears so you can send MIDI to the Mixer or SubTractor 1. Choose SubTractor; you should hear it only when you play the high E string.
6. Check the Sequencer section. If there's a MIDI icon next to the SubTractor 1 track, check it to avoid routing MIDI to it from two different sources.
7. The fastest way to create five more SubTractors for the other strings is first to click the small arrow in SubTractor's upper left. This temporarily "folds up" the module so it takes less space (click again to unfold). Next, hold down the Shift+Option keys (Mac) or Shift+Control (PC), click on one end of SubTractor, and drag it down to create another one. ▶



HERE'S THE ACTUAL SETUP JERRY HAS USED ON SEVERAL SESSIONS, WITH TWO SUBTRACTORS PER STRING, DISTORTION, AND COMPRESSION. THIS SCREENSHOT SHOWS THE HIGH E STRING BEING ASSIGNED TO A SUBTRACTOR THAT RECEIVES ITS INPUT FROM MIDI BUS B.

For More Info

All users: Read Reason's well-written PDF manual. **Beginners:** Craig Anderton's *Wizoo Quick Start Guide* for Reason includes a CD-ROM with some starter templates, video tutorials, and free samples and loops.

Intermediate to advanced: Debbie Poyser and Derek Johnson's *Users' Guide To Propellerhead Reason 2* is an exhaustive (400+ pages), yet easy-to-read collection of tips and expert advice.

Web resources: Visit the www.propellerheads.se site, or do a search and you'll find many Reason link pages, sites for free Refills, and sites with Reason songs — there's a great community of people exploring and making music with Reason.

8. Do this until you have six SubTractors; they'll have the same patch and settings.
9. Go back to where you assigned your *E* string. The *B* string is most likely the next channel over (play the *B* string to make sure it lights up only that channel) and assign it to the next SubTractor on

the pull-down menu. Similarly assign the remaining strings.

You'll see SubTractors 1–6 on mixer inputs 1–6. (You can click on the SubTractor name on its "rack module" and rename it to correspond to the string controlling it,

e.g., SubTractor G; these names will show up in the mixer name strips.)

PROCESSING TIME

Now let's add some processors.

1. Hold the Shift key, go to the Create menu, and call up a Scream 4 Distortion (Reason 2.5 only; otherwise call up the D-11 Foldback Distortion) and a COMP-01 Compressor/Limiter. Holding down Shift during creation prevents automatic audio routing.
2. Hit the Tab key; note that the mixer outs connect to the Hardware Interface 1 and 2 outs.
3. Drag the cable that goes from your mixer Left Out down to Scream 4's Left Input. Do the same with the mixer Right Out to the Scream 4 Right In.
4. Connect the Scream 4 Left Out to the COMP-01 Left In. It will automatically patch the other side. Connect the COMP-01's Left Out to the Hardware Interface Input 1. It will patch the right side automatically.
5. Your signal chain is *Synths > Mixer > Scream 4 > COMP-01 > Hardware Interface*. Set the compressor's ratio to around 4:1 or more to smooth out any sudden volume jumps as you experiment with synth patches and filter resonance.

Scream 4 has a couple of great EQ/filtering sections. To do amp simulation and avoid the possible sterility of direct synth sounds, check out the "Fidelity FX" folder of factory presets. I particularly like "AMRadio" (try decreasing the "damage" to around 9 o'clock), "DynoGrade," and "PlasmaFlow."

Another great Reason processor, ECF-42 Envelope Control Filter, can serve as an EQ/filter. Set the Envelope amount to 0 and use the Frequency and Resonance parameters to shape the tone. I use it on the mixer outputs, but before the limiter/compressor, again to protect myself and other living things while I tweak the freqs.

LAYERING

Let's layer some more different sounds; bypass Scream 4 so we can audition them. In your first SubTractor (played by the high *E* string), load in a different pad sound. Try out "Enormic" from the Pads folder. As before, reduce the Pitchbend range to 2 (or 0 to turn off pitchbending), and set polyphony to 1. (Note that it's a

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good idea to start your own folders of tweaked patches for MIDI guitar so you don't always have to redo Pitchbend and Polyphony values — click on the floppy disk icon and save to your personal sounds folder. It's also worth saving the setup as a template for future use.)

On your second SubTractor (the B string) load in the "Suitcase" patch (Polysynths folder), then go to your fourth SubTractor and load up "FeedAche" (Pads folder). Again, set the Pitchbend and Polyphony values as desired. Now the first four strings have four different sounds, with individual mix controls for panning and level. Experiment with some sounds for the remaining two strings. If you want to add an effect to just one synth, it's easy: Click on the synth to be processed, go to Create, and add the effect — Reason inserts it in the signal path automatically. Yes, you can have a different effect chain on each string!

Here's where it gets mind-boggling. You can create a mixed setup where two of the guitars' strings are SubTractors, two more get Malström Grintable synths,

another drives an NN-XT Sampler, and a Rex loop player goes to the last string. Create effects loop chains for each string, and add as many mixers as you need.

DOUBLE (OR QUADRUPLE) YOUR PLEASURE

Let's add another quick set of voices.

1. If you hold Option (Mac) or Ctrl (PC), when you click the arrow on the upper left of any module it will compact them, or expand them where you see the entire front panel. Compact them.
2. Go *Edit > Select All Devices*, then choose Copy Device under the same menu, and finally choose Paste Device. This creates a duplicate of your setup with the six SubTractors.
3. Hold the Shift key and *Edit > Create* another mixer.
4. Take the Compressor 1 outs and drag those cables down to Input 1 on the new mixer. Connect your second Compressor's outs to the new mixer, Input 2. Connect the Master Out Left

and Right to the Hardware Interface 1 and 2, and you now have 12 SubTractor voices available — two per string.

5. To MIDI up to these six SubTractors, go to the MIDI In Device strip and click "Bus B." (Remember in Advanced MIDI Preferences we assigned all four busses to the MIDI guitar so it feeds all four buses simultaneously.)
6. Click on the pull-down arrows by each MIDI channel; you'll see the original six SubTractors in the menu, along with the six new copies. Assign each string to one of the six copied SubTractors.

Using buses A thru D this way, you can layer up to four independent synth/sample/drum or loop modules per string. That's up to 24 individual sounds firing from the guitar at once! **ED**

Jerry McPherson lives in Nashville, where he collects vintage guitar gear, does session work, and hopes that one day Propellerhead will come out with an amp modeling/guitar rig counterpart to Reason.

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THE GOURMET GUIDE TO MULTIBAND DISTORTION

DON'T MISS OUT ON THE NEXT BIG THING IN GUITAR DISTORTION

by Craig Anderton

If you're a guitarist and you're not into multiband distortion . . . well, you should be. Just as multiband compression delivers a smoother, more transparent form of dynamics control, multiband distortion delivers a "dirty" sound like no other. Not only does it give a smoother effect with guitar, it's a useful tool for drums, bass, and believe it or not, program material — some people (you know who you are!) have even used it with mastering to add a distinctive, unique "edge."

As far as I know, the first example of multiband distortion was a do-it-yourself project, the Quadrafuzz, that I wrote up in the mid-'80s for *Guitar Player* magazine. It remains available from PAiA Electronics (www.paiia.com), and is described in the book *Do It Yourself Projects for Guitarists* (BackBeat Books).

I came up with the idea because I had heard hex fuzz effects with MIDI guitar, where each string was distorted individually, and liked the sound. But it was almost *too* clean, yet I wasn't a fan of all the intermodulation problems with conventional distortion. Multiband distortion was the answer. However, we've come a long way since the mid-'80s, and now there are a number of ways to achieve this effect with software.

HOW IT WORKS

Like multiband compression, the first step is to split the incoming signal into multiple frequency bands (typically three or four). These usually have variable crossover points, so each band can cover a variable frequency range. This is particularly important with drums, as it's common to aim the low band at the kick and distort it a bit, while leaving higher frequencies (cymbals, etc.) untouched.

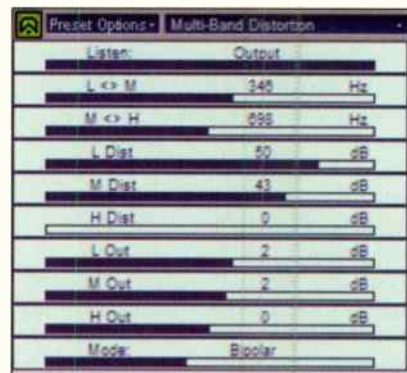
Then, each band is distorted individually (incidentally, this is where major differences show up among units). Each band will usually have a volume control so you can adjust the relative levels among

bands. For example, it's common to pull back on the highs a bit to avoid "screach," or boost the upper midrange so the guitar "speaks" a little better.

With guitar, you can hit a power chord and the low strings will have minimal intermodulation with the high strings, or bend a chord's higher strings without causing beating in the lower ones.

SOFTWARE PLUG-INS

The first multiband distortion plug-in was a virtual version of the Quadrafuzz, coded as a VST/DX plug-in by Spectral Design for Steinberg. Although I was highly skeptical that software could truly emulate the sound of the hardware



WHILE BANDITO IS THE LEAST SOPHISTICATED OF THESE PLUG-INS, YOU CAN'T BEAT THE PRICE. IT'S AS GOOD A WAY AS ANY TO GET FAMILIAR WITH MULTI-BAND DISTORTION.

design, fortunately a guitarist was on the design team, and he nailed the sound. But they took it further, offering variable frequency bands (the hardware version is "tuned" specifically for guitar), as well as five different distortion curves for each band, from heavy clipping to a sort of "soft knee" distortion. The Quadrafuzz is now bundled with Cubase SX.



WILD, WACKY, AND WONDERFUL, OHM FORCE'S PREDATOHM HAS SOME SERIOUS ATTITUDE. UNDER ITS SPELL, EVEN NYLON-STRING GUITARS CAN BECOME HARDCORE DIRT MACHINES.



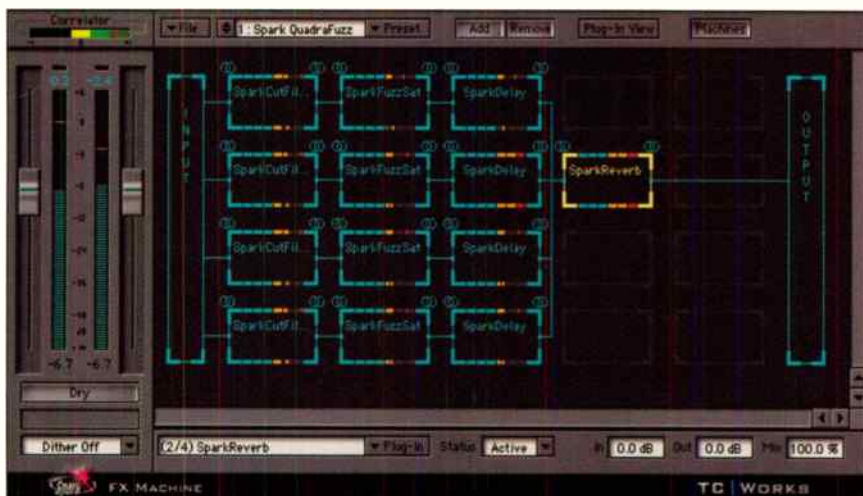
STEINBERG'S QUADRAFUZZ WAS THE FIRST MULTIBAND DISTORTION PLUG-IN. IT IS NOW INCLUDED WITH CUBASE SX, AND IS PROBABLY THE MOST STRAIGHTFORWARD OF THE VARIOUS PLUGS.

A free plug-in, mda's Bandisto, is basic but a fine way to get started. It offers three bands, with two variable crossover points, and distortion as well as level controls for each of the three bands. There are two distortion modes, unipolar (a harsh sound) and bipolar, which clips both sides of the waveform and gives a smoother overall effect.

Ohm Force's Predatohm provides up to four bands, each of which includes four controls to change the distortion's tonality as well as the channel's overall tone and character. Unique to Predatohm is a feedback option that can add an extremely aggressive edge (it's all over

my *Turbulent Filth Monsters* sample CD of hardcore drum loops), as well as a master tone section.

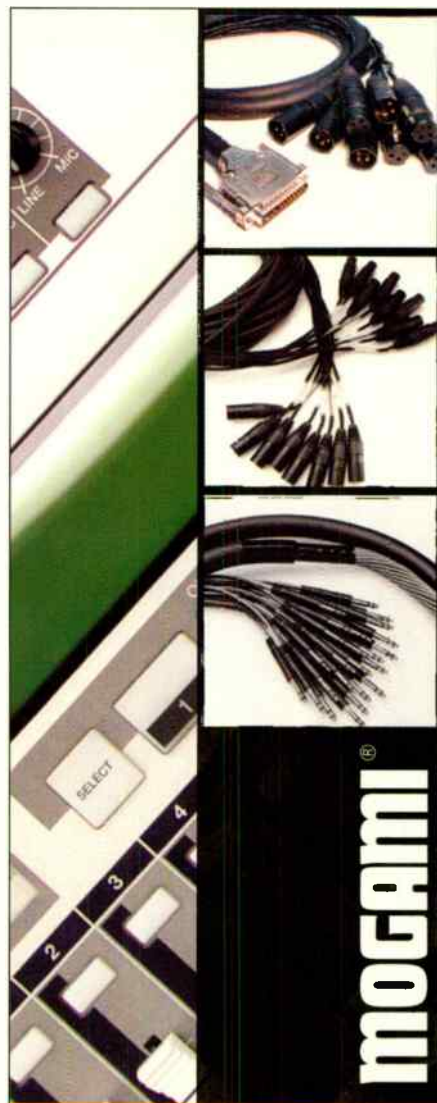
iZotope's Trash (reviewed June 2003) uses multiband distortion as just one element of a comprehensive plug-in that also incorporates pre- and post-distortion filtering, amp cabinet modeling, multi-band compression, and delay. The number of bands is variable from one to four, but each band can have any one of 47 different algorithms. Also, there are two distortion stages, so you can emulate (for example) a fuzzbox going into an overdriven amp (however, the bands are identical for each of the two stages). The pre- and



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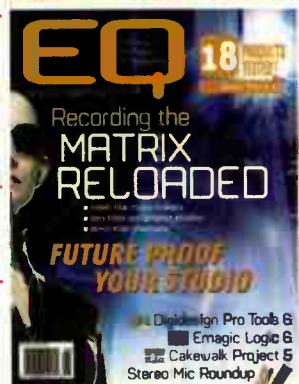
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post-distortion filter options are particularly useful for shaping the distortion's tonal quality.

BUILD YOUR OWN

You're not constrained to dedicated plug-ins. The Spark FX Machine and BIAS Vbox are VST-compatible plug-ins, arranged as a matrix of slots for inserting effects, that host other VST plug-ins. The matrix format allows for series/parallel combinations of effects. In other words, you can split a signal into several parallel bands, each containing multiple series effects — just what's needed for multiband distortion.

As FX Machine comes with a family of plug-ins, it's easy to get started. The CutFilter plugs are ideal for band-splitting, while the FuzzSat modules provide distortion. But of course, you needn't stop there; in the screenshot (page 41, FX Machine), I added delay for each effects string, as well as a master reverb. Hey, if you got it. . . .

Yet another option is to copy a track in your DAW for as many times as you want bands of distortion. For each track, insert the filter and distortion plug-ins of your choice. One advantage to this approach is that each band can have its own aux send controls, as well as panning. Spreading the various bands from left to right (or all around you, for surround fans!) adds yet another level of satisfying mayhem.

AND BEST OF ALL . . .

An article in our May 2003 issue describes how today's fast computers, soundcards, and drivers often let you play through plug-ins in real time — so you can tweak away while playing crunchy power chords that rattle the walls. Happy distorting!

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QUANTIZING GUITAR PARTS

FIX THOSE PESKY TIMING PROBLEMS

by Craig Anderton

Ever play the *perfect* solo or riff except that one note was just a little bit early, or a little bit late? If you never have, then put down this magazine *immediately*, move to Los Angeles, New York, or Nashville, and start doing session work. Otherwise, keep reading.

DIGITAL AUDIO QUANTIZING TOOLS

The first time I saw audio quantization was in Opcode's late, great StudioVision program. The process required signals with strong transients and fast attacks, such as drums, guitar, bass, piano, etc.

Quantization was a two-step process: First, you applied the equivalent of a noise gate to strip out all the silences in a digital audio track (Fig. 1). Thus, all the notes with sharp transients started a new "block" of audio. The beginning of each block could then snap to a grid, just like MIDI notes, to quantize the parts.

Beat Detective for Pro Tools takes a more sophisticated approach. In a nutshell, it too looks for transients, but works pretty much automatically. Once it finds the transients, it moves them so they fall on a grid, and extends or shortens the audio in front of the transient to make up for any timing inconsistencies.

There are several variations on these basic themes, but let's look at a process that works with just about any DAW software. It's definitely not an automatic process; you need to slice audio manually, and move the pieces around yourself.

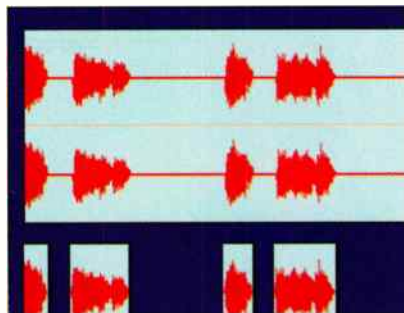


FIG. 1. SEPARATING AUDIO INTO SMALLER BLOCKS ALLOWS QUANTIZING THEM TO A GRID.

While the downside is that this is less convenient, the advantage is that you can be selective in what you do or don't quantize.

This is important, because it's okay if notes aren't quantized exactly to the beat, as long as they sound right. Those little tempo variations that lead or lag the beat are a crucial part of providing emotional impact. I've analyzed guitar solos where notes would come in 30 or 50 ms late compared to the beat, but that added a cool feel — quantizing them to the beat took all the life out of the solo. So, *always use quantization to fix mistakes based on what you hear with your ears, not what you see with your eyes.*

Another issue is that quantizing in isolation can lead to problems. For example, suppose the drummer played the snare a bit late compared to the beat, and all the players followed right

along. If you quantize just one part, then its timing will sound "off," so you'll have to quantize the others too . . . and it all might be for nothing if you then decide that the tune sounded better with the snare lagging anyway. If it ain't broke, don't fix it.

BUT THIS ONE'S BROKE!

What got me into writing this article was working on a new library of looped guitar riffs called "Adrenalinn Guitars," using effects primarily based on Roger Linn's wonderful Adrenalinn processor. Because loops like these are generally used in conjunction with quantized drums and other loops, the notes need to be right on the beat so they fit in properly. If someone using the loops wants to add a timing variation, it's usually done by inserting a small tempo change to lead or lag, not moving bits and pieces of audio around.

The upper part of Fig. 2 shows the original guitar riff (only one channel is shown to save space). The four lines (three white, one red) indicate eighth-note divisions. Note that the first note is right on an eighth-note division, the second one is just a tiny bit ahead, the third note lags by a bit, and so does the fourth.

The lower part of Fig. 2 shows the same riff after quantizing, using the technique we're about to describe. The timing has been perfected, but without any glitching, pops, or other indications that quantizing took place.

THE PROCESS

Let's first show how to quantize a note that lags behind the beat; as an example, we'll fix the last note in Fig. 2 (the one that lags the red line). Here's the step-by-step:

1. Zoom in on the waveform, as shown in Fig. 3.
2. Turn off any snap-to-grid function.
3. Split the clip at the precise beginning of the lagging note. A yellow line indicates the split in the top third of Fig. 3. Also split at the end of the note, or before the next major transient. Basically, we want to isolate the section that needs to move.
4. Turn on the snap-to-grid function (in this case, it's set to eighth-notes).
5. Slip-edit the section of audio just before the lagging note, and move it

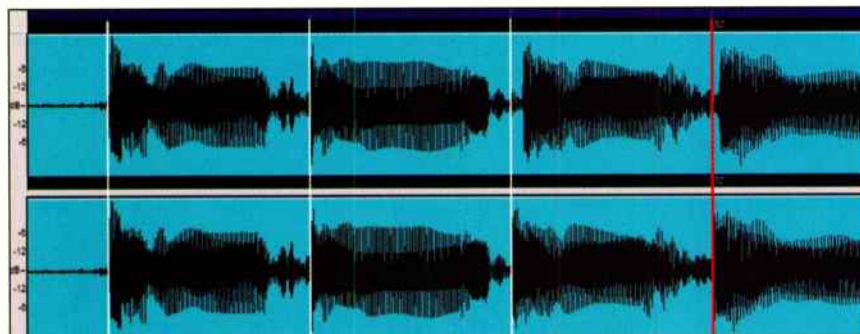


FIG. 2. A GUITAR RIFF BEFORE AND AFTER QUANTIZING.

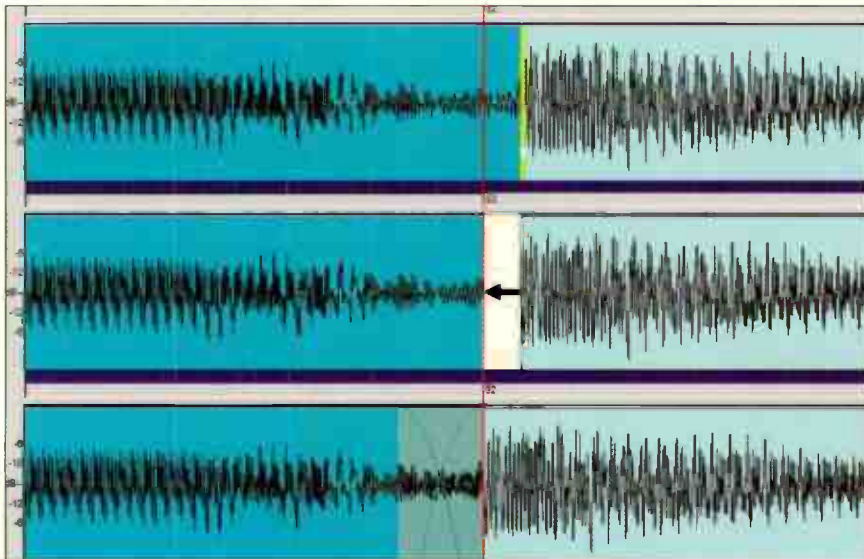


FIG. 3. THREE STEPS INVOLVED IN QUANTIZING A NOTE THAT LAGS THE BEAT.



FIG. 4. THREE STEPS INVOLVED IN QUANTIZING A NOTE THAT LEADS THE BEAT.

back to the point where the note should start. Because snap is on, the end of the clip should snap right into position on the eighth-note. This opens up a space between where the note should start and its current location (Fig. 3, middle third).

6. Move the lagging note left to the proper start point, in the direction indicated by the arrow in the middle third of Fig. 3. Note that this will also open up a space at the end of the

clip, which is why we added a split there in step 3. Otherwise, when you moved the clip to the left, it would move the entire rest of the track to the left. However, you will likely need to go back and close up this space, probably by crossfading in a manner similar to what's described in the second step-by-step example.

7. Crossfade over the split point to eliminate any clicks or pops (Fig. 3, lower third). Roll the crossfade out

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starting from the note's attack, and move *left* so that it crossfades with the existing decay.

8. Audition what you've done to make sure all is well. Adjust the crossfade for the minimum amount of crossfade needed for a natural sound.

If the note is ahead of the beat instead of behind, the process is somewhat similar.

- 1. Zoom in** on the waveform, as shown in Fig. 4.
- 2. Turn off** any snap-to-grid function.
- 3. Split** the clip at the precise beginning of the leading note. A yellow line indicates the split in the top third of Fig. 4. Also split at the end of the note, or the next note transient.
- 4. Turn on** the snap-to-grid function (e.g., eighth-notes).
- 5. Move** the leading note to the right so that it snaps into position on the eighth-note (Fig. 4, middle third). *Do not* slip-edit the section of audio prior to the note attack to cover up the space, as that will cause a double attack. (Note that because we added a split at the end of the leading note, moving the clip to the right will cause its end to overlap the start of the section after the split. You will need to revisit this later and fix it, probably by slip-editing the clip so it no longer overlaps the beginning of the next one, then crossfading to smooth over the splice.)
- 6. Crossfade** over the space and into the previous decay to eliminate any clicks or pops (Fig. 4, lower third). Roll the crossfade out starting from the note's attack, and move *left* so that it crossfades with the existing decay. Note: If the gap that needs to be covered is large, prior to crossfading you may need to add a hard fadeout to the end of the clip. Otherwise, even with crossfading, there may be an abrupt cutoff.
- 7. Audition** what you've done to make sure all is well. As before, use the minimum amount of crossfading needed for a natural sound.

This may seem time-consuming (and if you're trying to fix all the glitches for a player with a timing problem, it is). But to fix the odd note here and there, this technique provides a simple, transparent-sounding solution. **EQ**

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SONAR'S VIRTUAL MIDI GUITAR

GET MIDI GUITAR SOUNDS AND VOICINGS – WITHOUT MIDI GUITAR

by Craig Anderton

Compared to keyboards, one of the great aspects of guitar is those wide-open voicings that use a mix of open and fretted strings. Keyboard players don't naturally play this way, which is perhaps why some keyboard-centric recordings lack the depth that guitar can bring to a mix.

If you're primarily a keyboardist who knows a little guitar but has a hard time fingering some of the more challenging guitar chord shapes, or if you're a guitarist who doesn't use MIDI guitar but would love to get guitar voicings with sounds other than guitar, read on. Sonar has a little-known feature that is essentially a virtual MIDI guitar, and makes it possible to generate guitar-like parts with no extra gear.

THE PROCESS

Start by loading a suitable patch, guitar or otherwise, from a soft synth or external tone module. Decide which MIDI track will contain the notes, assign it to your soft synth or the output port feeding your external synth, make it the active track, then go *View > Staff* (keyboard shortcut: Alt+7).

“Sonar has a little-known feature that is essentially a virtual MIDI guitar, and makes it possible to generate guitar-like parts with no extra gear.”

When the staff appears, type V on your computer keyboard, or click on the guitar neck icon (located toward the upper right, between the Play Next and Export to ASCII Tab icons), to show a guitar neck with 21 frets.

Right-click on the fingerboard to choose from rosewood, ebony, or maple fingerboards, in high or low graphic resolution (no, you can't choose between a Les Paul or Strat scale length). As entering data here is a step-entry process, this pop-up

menu's Note Length parameter lets you to choose the desired note duration.

Click on the measure indicator above the staff where you want to enter the chord. Then use the pencil tool to click on the desired notes on the virtual fingerboard, or on an open string (i.e., below the first fret). Like a real guitar, you're allowed one note per string. As you enter each note, it will show up as notation on the staff. As with any other kind of notation screen entry, you can cut, copy, paste, etc., individual notes or groups of notes.

Notes within a region show up as blue; if you start playback, notes will light in red as they sound. Otherwise, notes are black. You can play the next note/chord or previous note/chord by clicking on the Play Next or Play Previous icons (the ones with the shoes, as in "step").

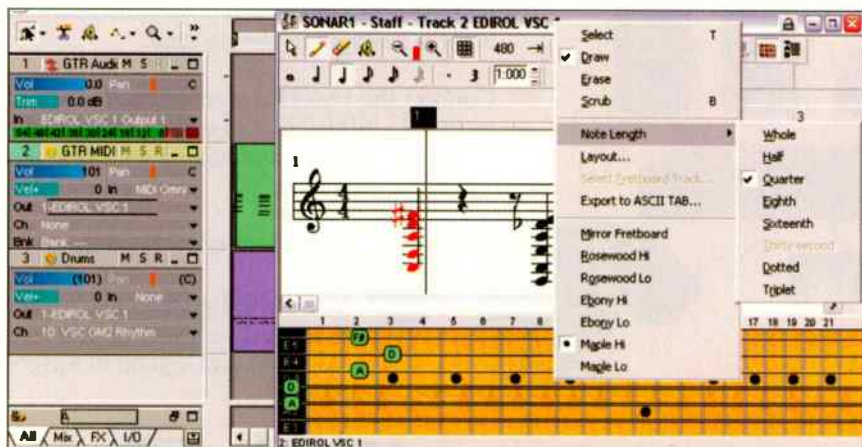
STRUM ME, BABY

Now for the final touch: open the Piano Roll view, and edit the chord notes to create a strum effect. To do this, "spread" the note attacks so that the lowest note starts a bit ahead of the beat, the highest note starts a bit behind the beat, and the other note attacks follow an even gradient between the highest and lowest notes.

You can also try moving the whole chord, including offsets, so that the highest note hits right on the beat. This provides a different kind of phrasing; guitarists use both, depending on the feel of the song. Offsetting the notes will make the notation screen look less pretty (what is the notational symbol for "a few MIDI clocks ahead or behind the beat," anyway?), but the sound will be much more realistic.

If you're in a hurry to get a strum effect, select the notes to be strummed, then go *Process > Run CAL > Random Time.cal*. Specify around 100 ticks of variance if you're using 960 PPQ. The effect isn't as realistic as adjusting notes individually, but it prevents simultaneous attacks, which sound very unlike guitar.

And that's all there is to it. Admittedly, this is a roundabout way to get guitar voicings compared to using real guitar. But when what you're working on has to make the last Fed Ex pickup, and you need a few guitar power chords, combining this technique with a good guitar sound generator will do in a pinch. EQ



A guitar D chord (with the 5th as the root) plays back through a guitar patch from Sonar's Edirol soft synth. The pop-up menu is being used to select quarter-note durations for notes being entered.



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GUITAR RECORDING
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GUITAR PROCESSING WITH EVOLVER

GOOD THINGS COME IN SMALL PACKAGES . . . AND SO DO SURPRISES.

by Craig Anderton

I like little boxes. I like little boxes that do lots of things even more.

When Dave Smith introduced Evolver (www.davesmithinstruments.com), a lot of keyboard players salivated over the prospect of a compact, inexpensive, great-sounding monophonic synth with an artful blend of analog and digital technology. Almost lost in the shuffle was the fact that it had guitar- and studio-friendly stereo inputs, with pretty potent processing power.

So does it replace a traditional multi-effects? No; for example, there's no reverb. But if you do recording and play guitar — or even better, record and double on keyboards and guitar — this box addresses all of those needs, and then some.

PROCESSING MODULES

The main attraction for processing is two analog lowpass resonant filters (not digital emulations), switchable between 2- and 4-pole operation. There's one for each channel. Additional per-channel digital

highpass filters are good for trimming out some boominess from a guitar signal; there's also distortion, which can go pre- or post-filter.

Of particular interest to guitarists are two control sources: envelope follower and peak detector. There are three envelopes (triggerable from the input signal), tempo-syncable LFOs that respond to incoming MIDI tempo information, tunable feedback loops for each channel, and a three-tap monaural delay. Delay can be tempo-synced, with the feedback path routable through the filter; and of course, you can use the internal sequencer to control parameters such as filter cutoff.

To get the most out of Evolver, you'll need to jack into the matrix . . . of parameters, that is. Select the Row containing a parameter to be edited, find the parameter's Column, then turn the Column's associated knob to change the parameter value. Once you get into the unit, this is actually a pretty painless process. But if

you prefer, computer editors are available from the Dave Smith website, along with templates for the Peavey PC-1600 (which turns out to be a surprisingly effective way to edit).

PREPARE FOR GUITAR . . .

Odds are your guitar is mono, so plug into the Left jack, as that's where the envelope follower and peak hold modules derive their trigger. The "guitar" factory programs (Bank 3, 20-29) have the Ext In parameter (Row 8, Column 7) preset to L, or Left input only. This setting is saved for each patch, so if you create your own programs or overwrite existing programs with guitar setups, make sure to set this parameter to L. Also, you may need to adjust the Input Gain (second Main row, Column 3) depending on the patch and your instrument's output level.

. . . BUT PRETEND IT'S A SYNTH

The guitar programs give only a taste of Evolver's talents: For wicked guitar fun, choose a synth patch that messes with filtering, and adapt it to guitar. Here's an example of how to adapt a synth patch, using Factory Patch 19 in Bank 1. (Make sure your guitar is plugged into the left input before proceeding.)

1. Turn down *all* oscillator outputs. The level controls are located at Rows 1 and 2, Columns 4 and 8.
2. Turn up the Ext In volume (Row 8, Column 6) so the guitar gets mixed in to the signal path instead of the oscillators.
3. Increase the Input Gain control if needed.
4. Hit the Start/Stop switch to start the sequencer. You'll hear pulsating, filtered effects; adjust the tempo to suit.
5. Now let's double-time it with some echo. Go to Row 5, Column 4 and set Time to St2. Turn up the delay Level in Column 5 to around 50 or so.
6. Row 3 also has some useful parameters: Play around with Columns 3, 4, and 7 (Attack, Decay, and Resonance, respectively).

This single example just scratches the surface; my own experiments with this instrument continue to, uh, evolve. But if you thought the guitar patches represent Evolver's total contribution to guitar processing, you have some pleasant surprises in store. **EQ**



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HOT TIPS

ANTARES AUTOTUNE

By Gerry Bassermann

Antares AutoTune was originally designed to address intonation problems of monophonic material, and is typically applied to vocal tracks. Even after comping together the best of multiple takes, a lead vocal may still have awkward pitch problems that need to be resolved long after the singer has left the studio. For this application alone, AutoTune has established a long track record of successful session (and reputation) saves.

But many years into the life of this workhorse product, engineers and producers from all styles of music have also found interesting and novel ways of using AutoTune to create musical effects that often exceed the possibilities of the unprocessed voice. The incredibly fast and accurate pitch gymnastics heard on pop radio stations are a good example, as are the robotic drones and super fast trills heard at rave extravaganzas.

As of version 3.0 (introduced in 2001), Antares also added an Input Type control (for selecting instrument type or specific vocal ranges) as well as an algorithm designed for bass frequencies, so melodic sources of all kinds can be processed. The techniques discussed here cover a variety of situations, from repair work and instrument processing to melodic creations and effects.

AUTOMATIC MODE

Automatic mode needs little explanation, because it works so well in most situations where the correct scale and Retune speed are selected. But there is one feature that is massively underused: the Bypass column in the Scale window. This allows you to bypass specific frequency areas (pitches) so the exact intonation of the source is preserved. This can be important if you're interested in maintaining the performer's true expressive qualities, while at the same time helping them with other wayward notes. A good place to exercise this level of control is in a blues vocal, where the thirds of the scale (minor and major) can be an area of particularly subtle expression, and you

don't want to step on that. Try bypassing those notes while correcting the rest of the scale to get a soulful and in-tune result. **Figure 1** shows this in the key of A.



Fig. 1.

GRAPHICAL MODE

There are lots of AutoTune users out there, but few dive into the Graphical mode. Two words: Do it. The graphic analysis alone is worth the price of admission. Try tracking the pitch of a vocal that sounds spot-on pitch-perfect and you'll see what I mean. To do this, enter Graphical mode, enable Track Pitch, and play the audio selection. The pitch envelopes of each word are displayed in a grid with the scale references to the left (reflecting whatever has been selected in Automatic Mode). Notice the incredible amount of detail and constant variation. Both you and your vocalist (if you're not the singer) can learn a lot about style and phrasing from these detailed intonation graphs.

Of course, once you're there, who can resist a little tweak? Graphical Mode makes this supremely easy with a set of four tools next to the Playback section: Line Tool, Curve Tool, Pointer, and Zoom/Select. If you want to make subtle changes that are transparent to the listener, use the Pointer. This tool can alter the overall shape of the pitch envelope without changing the character of the audio.

I recently worked on an R&B tune where the vocalist was really hammering her "a's" and on one line, "Yeah, you were always on my mind," the beginning of the word "always" was also a little sharp. The result nailed me right between the eyes. I had to use the Graphical mode in AutoTune to bring down the pitch in this tight little spot without changing her style

or losing the emphasis on the word. Pretty tall order. Here's how you'd do it: From Graphical Mode, enable Track Pitch and play the part so the original pitch contour (in red) shows on the screen (**Figure 2**).



Fig. 2.

You can tell where the problem is by the big energy surge in the waveform display at the bottom of the AutoTune screen. Next, invoke the Make Curve function, which generates yellow target contours that can be reshaped. Each of the words or phrases have anchor points on the ends that can be moved. Select the Pointer Tool, which turns into crosshairs when placed over an anchor. Now you can move an anchor sharp or flat using the anchor on the other end of the contour as a kind of hinge. Drag the first anchor (in this case, the first syllable of the word "always") from above the A# to slightly below (**Figure 3**).



Fig. 3.

I usually hold the Option key down while doing this to make sure that I'm not moving the timing inadvertently. The result sounds completely natural because the contour of the original vocal style is preserved.

BETTER VIBRATIONS

Many singers have a bold vibrato style that can be hard for them to control, even when asked during a recording session. I've often been left to deal with this during the mix, and turn to AutoTune for help. Vocal vibrato is a combination of tremolo (volume pulsing) and vibrato (pitch pulsing). AutoTune addresses only the pitch side of things, but this is usually the more annoying.

It would seem that Automatic mode with a somewhat fast Retune speed should deal with it by constraining the audio to the central pitch, but there are problems with this technique. One is that you'll probably have to automate the Retune parameter in your DAW because a moderately fast speed will make the singer sound robotic (that may be what you're after, though . . .). Another issue is that if the vibrato is wide enough, it will actually begin to trill on any adjacent semitones in the current scale.

Graphical Mode has a more elegant solution for dealing with vibrato. First, track the audio (enable Track Pitch, play

audio). Then use the Line Tool to draw a horizontal line on F# (the central pitch in this example) for the duration of the vibrated note (Figure 4).



Fig. 4.

Playing this back with Retune speed at zero sounds over-controlled and weird, but slower speeds around 30–40 smooth out the effect.

TAKING THE NOTES OUT

The Curve Tool in Graphical Mode works

well for creating portamento effects between notes, or blurring the sense of tempered pitch altogether. I recently created a song setting of a Rumi poem, and wanted to do more of a theatrical treatment on the word "sigh." The singer had originally sung a descending A-F#-E figure, but during mixdown, I felt that a more continuously falling pitch would suit the word better. You can create this kind of effect by tracking the pitch of the selection, then using the Curve Tool to redraw the shape. Try to maintain as much of the original as possible to avoid creating distracting synthetic results. For example, completely replacing the original contour with a large, freely drawn descending curve would sound pretty alien. I opted to let the beginning and end of the word sound as originally recorded, then simply smooth out the pitch change from A down to E (bypassing the interim F# pitch — Figure 5). The listener hardly notices the artifice, since it's surrounded by unprocessed material.

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Fig. 5.

PUTTING THE NOTES IN

I was recently finishing a remix of some flute music, when the client announced that a certain melodic motif was essential at the opening of the piece. Of course, nothing like this had been recorded, but I was able to find a long sustaining note, and decided to try to fashion the motif in AutoTune using a combination of tools in Graphical Mode. In this case, it was a deep bass flute, so I used the AutoTune Bass plug-in.

Here's how to create a new passage: Capture the pitch envelope by playing the

phrase with Track Pitch enabled, then use the Line Tool to roughly draw the new melodic shape, using the pitch grid and note scale on the left for reference. To adjust the rhythm, use the Pointer Tool to move the anchors into place, and then set the proper Retune speed to smooth out the legato and make it sound more natural (Figure 6).



Fig. 6.

Setting the Retune speed for instruments is quite different than for vocals. Vocals nearly always sound more natural with slower speeds, but instruments can often change pitch quickly, and therefore

“The curve tool works well for creating portamento effects between notes.”

can also sound unnatural if the Retune speed is set too slow. The speed I've chosen here (13) suits the material, which is moody and slow.

PUT IT TOGETHER

The two main modes of AutoTune can also work well together because Graphical mode can display exactly what your Automatic Mode settings are doing. I recently had trouble getting the Retune Speed and LFO Vibrato in Automatic Mode to sound right on a soprano sax part. The solution? I tracked the pitch in Graphical Mode and then used the Make Auto function to display the artificial LFO. While the rather fast Retune

Homework never sounded this good.

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Speed worked for most of the melody, it really stripped out some nice dips right at the beginning. To revert a section of the target back to the original material, use the Zoom/Select tool in the waveform area at the bottom of the screen to draw a selection and then use Make Curve (Figure 7).

A new target curve will be created with anchor points for editing.

I added interest by creating a trill using the LFO. To do this: From Automatic mode, set the Vibrato to a square wave with a Depth of 40, Rate of 5.3, and Delay of 1,000 ms. Track the



Fig. 7.



Fig. 8.




Fig. 9.

pitch in Graphical mode, and MakeAuto (Figure 8).

Since I only wanted the trill in the middle of the note, I used the Zoom/Select tool to select the last part where the sax plays a little ornament, and then used Make Curve to revert that section to its original shape. Then I used the Pointer tool to grab the anchor at the end of the LFO and raised it so the square wave modulates between B and C for a semitone trill effect (Figure 9). Then I set Retune so it sounded natural; I used a speed of 7.

We've covered several utilitarian and creative uses for Auto Tune using its Automatic and Graphical modes. Hopefully you've gleaned a few (or more) new techniques for your bag of tricks. And if this has inspired a new idea or helped you rescue a session from near implosion, we'd like to hear about it. Comments, good or bad, are welcome, so feel free to drop us a line

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by John Krogh

MOTU PCI 424 Card & Audio Interfaces

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Type: PCI-based audio interface system

Platform: Mac OS 9/X,
WinXP/98se/2000

Prices: \$995 2408mk3 Core system,
\$695 Expansion I/O; \$1,895 HD192
Core system, \$1,595 Expansion I/O;
\$1,495 24 I/O Core system, \$1,195
Expansion I/O

Contact: www.motu.com

Audio resolution: up to 24-bit/
192 kHz

Compatibility: CoreAudio, ASIO-
MAS-, Sound Manager-, GSIF-
or WDM-compatible host

**Maximum number of I/O
channels:** 96

Back in 1998 when MOTU released the original 2408 digital audio interface, computer-based multitrack recording hadn't yet caught on. At the time, MOTU's foray into desktop music production hardware was forward thinking and, dare I say, revolutionary? Until then there weren't many professional audio I/O choices available for native host apps, and the 2408 offered more bang for the buck than anything else on the market.

It wasn't long after the 2408 hit the streets that MOTU added several audio boxes to their lineup that collectively addressed just about every need a studio might have — whether you wanted lots of analog inputs, lots more digital I/O, or sweet-sounding hi-res A/D/A conversion, MOTU had an interface that could deliver.

One appealing factor was that all of the interfaces connected to a single PCI card for a total of 72 input and output channels, and any combination of three boxes could be snapped onto the card to create a flexible I/O solution.

This concept has obviously been a success. Over the years, as sample rates and bit-depths increased and converter technology improved, MOTU rolled out updated hardware to keep up with the changing times. And still, the concept of MOTU's PCI-based interfaces remains the same — why mess with something that works?

That's not to say MOTU hasn't raised the bar yet again. Their latest hardware offers a few key enhancements that are sure to find favor with golden ear audiophile-type engineers and bedroom-recording musicians alike.

OVERVIEW

MOTU sent all three of their new interface for this review, so I'll look at them collectively as an entire system, pointing

out highlights of each box along the way. But I'm getting ahead of myself.

Let's rewind a bit and cover the basics: A core system consists of two hardware components — a PCI-424 card and a rackmount audio interface. These are connected via a single AudioWire cable (it's actually a standard FireWire cable, but MOTU uses a proprietary format). There are three interfaces to choose from: the 2408mk3, the 24 I/O, and the HD192. A core system can include any one of the interfaces; additional I/O units can be purchased as expansion options. In addition, "legacy" (*i.e.*, discontinued) interfaces such as the 1224 can be connected to the 424 card, which means you can mix and match among a range

WITH CUEMIX CONSOLE, ANY OF THE INPUTS AVAILABLE IN THE SYSTEM CAN BE ROUTED TO ANY STEREO OUTPUT, SO SETTING UP CUSTOM HEADPHONE MIXES IS NO PROBLEM. WHEN MOUSING OVER TRIM POTS, THE VIRTUAL MIXER DISPLAY SHOWS YOU KEY COMMANDS FOR WORKING WITH THE MIXER CHANNELS, AS WELL AS HOW MANY FADERS ARE BEING USED FOR CUEMIX CONSOLE AND FOR YOUR HOST AUDIO PROGRAM.



of I/O options and expand the system to fit your studio's budget and growing needs.

■ **2408mk3.** As its name implies, the mk3 is the third incarnation of the now "vintage" 2408. Like the original, the mk3 has connectivity options up the ying-yang. Audio inputs and outputs are arranged into three banks, each of which can be set up to access one of four I/O formats: 8-channel TDIF, 8-channel ADAT lightpipe, eight channels of analog, and stereo S/PDIF. Each of its banks is configurable, so you could, for example, assign bank 1 to the analog ins and outs, set bank 2 to TDIF for interfacing with a similarly equipped digital mixer, and set bank 3 to accept eight channels of lightpipe from another computer running GigaStudio or some other virtual instruments.

There are two ways you can work with the 2408: It can serve as the audio interface with whatever

compatible host software you choose, or, when the computer is off or detached from the 424 card, the 2408 can be used as a stand-alone format converter. Back when digital multitrack tape machines were all the rage, this was an important feature, as it provided a hassle-free way to transfer from ADAT to TDIF, or vice versa.

Sample-accurate sync has always been part of the 2408's repertoire, but what's new to the mk3 is that any analog input or the dedicated S/PDIF input can accept video or SMPTE timecode, and, provided your host program has the ability to sync to SMPTE via the audio interface, the sequencer can be controlled from a 3/4" video deck or some other analog deck, for example, without having to use a MIDI interface that supports SMPTE. (Currently, only Nuendo/Cubase SX and Digital Performer support this.)

Software Configuration

Flexible doesn't even begin to describe the capabilities of MOTU's complete PCI-based audio interface system. Check out some of the highlights below.

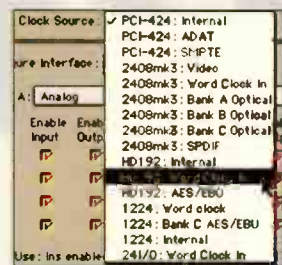
The PCI Audio Console utility is where you make the audio I/O, sample rate, sample buffer, and specific audio interface settings.



These are the interface options for the HD192. Notice the sample rate checkbox; when checked, incoming AES/EBU signals will be sample-rate converted to match the rate at which the HD192 is running (up to 96 kHz).



Here I've chosen the HD192's word clock input as the master clock source, but, as you can see, there are quite a few sync choices.



Specific audio settings such as the operating level for particular inputs are available from the PCI Audio Console app. Here we see the 24 I/O options.

Input Reference Level

Inputs 1-8 ● +4 dBu ○ -10 dBV

Inputs 9-16 ● +4 dBu ○ -10 dBV

Inputs 17-24 ● +4 dBu ○ -10 dBV

Word Out Rate: Match system clock

(5) firmware 1.0 hw 1.0 **Cancel** **OK**



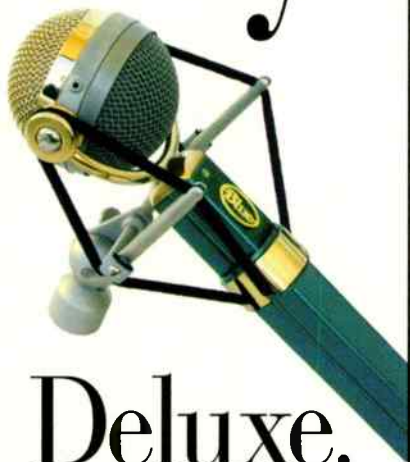
Along these lines, SMPTE timecode can also be generated from any of the analog or digital outputs, making it possible to stripe tape without a dedicated timecode box. (It won't burn the timecode onscreen, however.)

■ **24 I/O.** First there was the 24 I, which had plenty of inputs, but only a stereo monitor out. The 24 I/O adds 24 outputs to the mix, of course. This many ins and

outs (all balanced 1/4" TRS, by the way) might seem like overkill at first, but there are some obvious applications. You could, for example, take digital audio tracks from a computer into the analog domain by feeding the outs into a 24-channel analog mixer.

The TRS jacks can be switched in groups of eight via software to operate at +4 or -10, which is handy if you work with a combination of

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2001 TEC award winner

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MOTU PCI 424

pro audio and "semi-pro" gear. Nice.

Metering is the same as on the mk3 — 5-segment LEDs are provided for each analog channel. In practice, I found the meters easy enough to read and gauge levels from a distance of ten feet, give or take, but for more accurate readings I would rely on software meters.

There isn't much more to say, other than there aren't separate word clock in and out BNC connectors as there are on the mk3. The 24 I/O gets away with a single BNC that can be used for either receiving or sending clock signals. No biggie — just something to be aware of.

■ **HD192.** This replaces the 1296 as the hi-res option. It features stereo AES/EBU digital audio I/O and 12 analog inputs and outputs on balanced XLR connectors. I would have preferred Neutrik combo connectors, which can accept XLR or 1/4", but I can certainly understand the decision to go with XLR only. After all, this is a high definition interface, and anyone who's serious about their audio is likely to avoid 1/4" connectors, and instead work with outboard gear that interfaces with balanced XLR connectors.

Metering is luxurious — 19-segment "ladder" LEDs for all 24 analog jacks measuring -42 to 0 dB, plus two digital over LEDs. Why two? The top one remains lit after clipping until it's cleared via software. The lower over-LED only lights momentarily when the input/output clips. You can set a "time-out" period, after which the clip hold LED clears; a very professional touch.

Though intended primarily for outstanding A/D/A conversion, the HD192 also has a few digital I/O tricks up its sleeve. A total of 12 input and output channels can be active simultaneously, and there are exactly 12 channels of analog I/O — how do you assign the digital in and out? There's a "steal" function that lets choose which pair of analog inputs to replace with the AES/EBU input. Clever. It gets better. The digital I/O provides real-time sample rate conversion up to 96 kHz. This means you could integrate, say, a great-sounding outboard digital effects processor that tops out at 48 kHz and still run the session at 96 kHz — the HD192 is perfectly happy to deal with two separate sample rates, thanks to this capability.

PCI-424 CARD

The new PCI-424 card has onboard DSP

(MOTU calls it CueMix DSP) specifically dedicated to routing live input signals to whatever outputs in real-time with near-zero latency. This is big news. Any audio interface connected to the PCI-424 card benefits from this DSP, so any of the I/O boxes are capable of providing some of the same kind of functionality as a digital mixer. What this means is that live signals can be sent to and monitored from any of the analog or digital outputs with no sample buffer delay and no hit to your computer's processor.

As powerful as the PCI-424 is, though, it's not the end-all/be-all to native processor-based music production. There's been some confusion about what is and isn't possible with the card's DSP, so let me clear it up. The 424 card won't give you the ability to process live input signals through plug-ins with zero latency or increase the plug-in power on mixdown — this is all the domain of your host audio program and computer, which means you'll still have to deal with sample buffer latency and CPU usage if you want to apply plug-in effects on mixdown or to live tracks played into your computer. However, you can incorporate *outboard* effects into your monitoring setup with no latency, which is a very cool way of working.

Other PCI card enhancements include an additional AudioWire expansion port for a total of four, which means you can have a whopping 96 possible input and output connections available per card. Not too shabby.

IN USE

I put the entire system to good use over the course of several projects. My experience was, for the most part, hassle-free and enjoyable. There were a few hiccups along the way: When I first connected the HD192 to the 424 card, the interface wasn't available for configuration, even though the documentation says that it should be automatically recognized. Once I reinstalled the 424 drivers and console, everything was a go.

The system never once froze or crashed; it was rock-solid the entire time. That said, there were occasional digital clicks and pops from the 2408mk3 when I'd shut down my Mac. I quickly learned to kill my monitors before powering down, which is good practice anyway.

I was impressed by the build quality of each box, especially the mk3 — it's

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tank-tough. Equally impressive was the sound quality across the lot — I could immediately hear an improvement with the 24 I/O and mk3 compared to my older 1224 and 2408. When I checked against the HD192 there was no contest — it smoked everything else. For one session I had the pleasure of tracking acoustic guitar, bass, and vocals though the HD. Sonically, it produced clear, well-defined audio without any coloration or high-frequency harshness.

It did, however, put out more fan noise than all the other units. This will probably be an issue only if you're working at low levels. We all have separate machine rooms anyway, right? Stick it in there and forget about it!

An interesting fact about MOTU Audio interfaces is that they're hot swappable. This means you can power off, plug-in, add, and remove interfaces without turning your computer off or restarting. For kicks, I swapped various interfaces at will and guess what? The PCI 424 card never choked. I also played around with jumping from one sample rate to another; the entire system was happy to comply.

CONCLUSIONS

I'm not shy to admit I'm a fan of MOTU's PCI-424 audio system. I have a bunch of digital signals running around my studio, but I'm also concerned with good analog signal paths, and the bottom line is, MOTU has an audio interface that addresses my needs perfectly.

The modularity of it all makes complete sense. About the only option not available is some sort of box with built-in mic preamps. This might be important for some, but I guess that's why MOTU offers the 828 and 896. I'm not going to complain too loudly, though, because I couldn't be any happier with these boxes. Chances are you'll be just as pleased **ED**

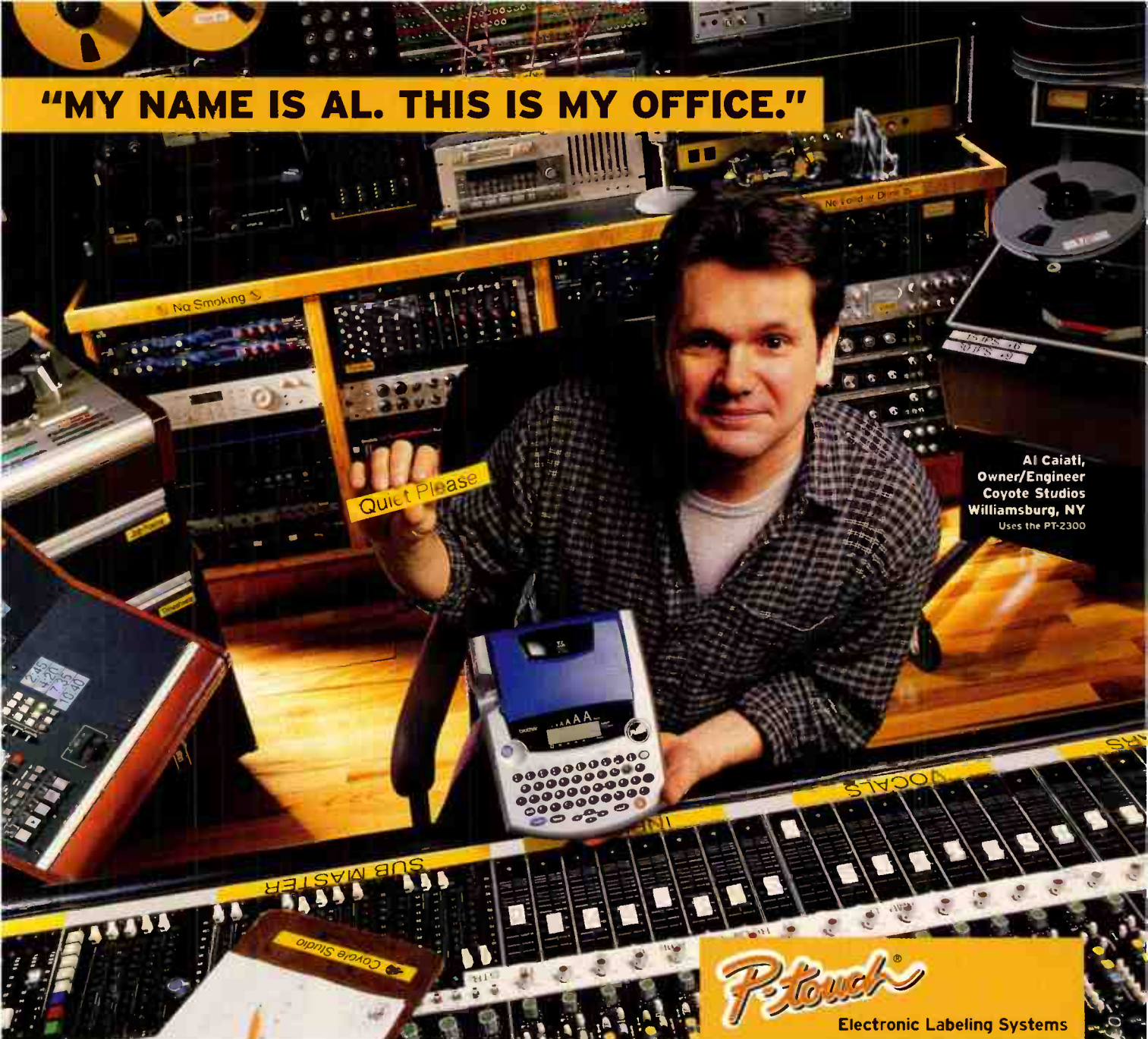
Strengths:

- Lots of connectivity options.
- Compatible with nearly every program.
- Near zero-latency via CueMix Console.
- 2408mk3 and 24 I/O: Software switchable to operate at +4/-10. HD192: Great-sounding converters. Real-time sample rate conversion.

Limitations:

- None of the interfaces provide mic preamps.
- 2408mk3: No AES/EBU I/O. Sporadic digital popping noise on shut down. 24 I/O: No digital I/O.

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Owner/Engineer
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by Mitch Gallagher

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Channels: 16 in (8 stereo pairs), 2 stereo pairs out

I/O: Balanced XLR

DANGEROUS MONITOR

Inputs: 3 analog, 4 digital

Outputs: two monitor stereo pairs, analog and digital meters, 4 digital thru

I/O: balanced XLR

DANGEROUS MQ

Inputs: stereo cue, 2 mono, analog and digital meters

Outputs: two 1/4" headphone, headphone amp out, slate out

I/O: balanced XLR

SINCE IT'S DESIGNED PURELY TO PROVIDE OPTIMUM ANALOG SUMMING OF SIGNALS, ONLY TWO BUTTONS ARE REQUIRED FOR THE 2-BUS USER INTERFACE: A 6 DB BOOST, AND A MONO SWITCH.

If you read the article "Sum of All Fears" on page 30, then you know that summing is a hot topic these days. For many engineers, the best way to deal with the issue of DAW summing is to avoid it altogether — feed the individual outputs from the DAW into an external mixer or summing box. The folks at Dangerous Music (studio owners/engineers/technicians) felt this was the right way to go, built their own summing box, and somewhere along the way got into the business of manufacturing and selling it. Soon they realized that if you're foregoing a mixer, there are a few other things you need: monitor control, and cue/talkback for starters. So they created boxes to address those needs, too.

DANGEROUS 2-BUS

The flagship of the Dangerous Music line is the Dangerous 2-Bus, a dedicated summing box. Built from top-of-the-line analog components, it's designed for one purpose: to combine the outputs of DAWs to stereo. It doesn't get much simpler than this: The 2-Bus has 16 XLR inputs, which are mixed down to a stereo pair.

There are two sets of outputs, both on XLRs. One is intended to feed your mixdown recorder, the other set goes to a monitor controller (such as the Dangerous Monitor; see below).

The 16 inputs are arranged into eight pairs. Each pair has 6 dB boost and mono switches — that's it. No level control, panning, or anything else. The output has a Gain control that offers 10 dB of attenuation in 0.5 dB steps; just enough to let you tweak the output a bit if necessary.

The idea is that you send signals out of your DAW as stereo stems (or submixes), or as hard-panned mono feeds. If you have stereo stems you send them into a pair of inputs — obvious, huh? If you have mono outs that are panned, submix them and run them in a pair of 2-Bus inputs as well. If you have center-panned mono outs, assign them to direct outs, send them into a pair of 2-Bus inputs, then hit that pair's front-panel "mono" switch, which sums them to the center of the stereo field. As an example, I was working on a rock track that had six tracks of drums: kick, snare, left/right overheads, and left/right room

mics. I brought these tracks to six outputs on my DAW. The kick and snare outs went to 2-Bus input pair 1 left and right; I hit the pair 1 mono switch, which summed them to the center of the stereo field. The overheads and room mics were brought into input pairs 3 and 4, and left in stereo.

Anything else you need to do must be done in your DAW; the 2-Bus is solely about summing. And it does a great job. The 2-Bus isn't a "color" or "warmth" box. It's a clean, clear, pristine analog path that preserves the detail in your digital tracks. If you're concerned about your DAW's summing, the 2-Bus is one of the best ways I know of to circumvent the problem. Just one thing for the wish list: inserts on the stereo out so you can patch in a compressor or EQ and still rely on the 2-Bus outputs to feed your mixdown recorder. ►

Strengths:

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- Easy to operate
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Limitations:

- Stereo pair input arrangement takes getting used to



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-Joel Rosenblatt, Spyro Gyra Drummer

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grand piano, is nothing short of amazing!"

**-Dale Sticha
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-Jay Lipschutz, FOH Engineer, Jaci Velasquez

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Dangerous Music



DANGEROUS MONITOR

If you've gone with a DAW and summing box, then you're likely struggling with monitor control and source switching. While you can do it in your DAW, it's nicer to have a box with real knobs and switches you can reach for...and that's just what the Dangerous Monitor is. But the box does more than that.

Monitor has seven stereo inputs. Three of these are analog on XLR connectors. The remaining four are AES digital ins on XLR; each digital input has a corresponding AES thru connector for routing to another destination. Monitor has a built-in digital-to-analog converter (supports up to 96 kHz) that's fed by the AES inputs.

There are two sets of monitor outs, main and alternate. Monitor also has two meter outputs, one analog VU, the other digital. These can run to an external meter or phase scope, or can be routed to the Dangerous MQ (see below).

Up front, there are switches for selecting the seven inputs, and a 21-position stepped attenuator for volume control. In addition, there are eight function switches. A pair of these serve as left and right output mute and another pair are phase (polarity) switches for the outputs. The remaining four switches are used for monitor dim, output mono, main/alt speaker selection, and a 6 dB pad for the analog meter output.

In use, Dangerous Monitor is a treat. It sounds great — clear, clean, and no self-noise. There are plenty of inputs for most applications, although it would be nice to have dedicated S/PDIF and/or optical digital inputs in addition to the AES ins. In practice, I was able to route the S/PDIF out from my reference DVD player into an AES in (using an RCA to XLR adapter cable) without difficulty. There's no need to worry about clocking when using the digital inputs; Monitor automatically clocks to the selected digital input.

Strengths:

- Crystal clear audio path
- Plenty of inputs
- Built-in digital-to-analog converter
- Dead simple to use
- Automatically clocks to selected digital input

Limitations:

- Pricey
- No dedicated S/PDIF or TOSlink inputs

DANGEROUS MQ

At *EQ* we don't review "beta" or prototype items, since so much can change before the product actually ships that such a review would be obsolete before it was published. In this case, however, we've made an exception. The Dangerous MQ isn't shipping yet, but Dangerous Music included one with the 2-Bus and Monitor so that we could evaluate a complete system. Keep in mind that the information contained here may change before the product is available.

The Dangerous MQ is a versatile box designed for metering and cue/headphone/talkback. There are several sections to the unit. The first is the cue mix. MQ accepts a stereo input on XLR; normally this would be backing tracks that you're overdubbing on. When used in conjunction with Monitor, the stereo input is switchable between the output selected on Monitor or the "cue in" XLRs on the rear panel. There are two additional XLR inputs that can be mixed in with the stereo cue input; these might be a vocal microphone feed or whatever instrument you're recording. All four inputs are mixed and sent to the MQ's headphone amp. The idea is to circumvent latency and headphone mix problems common to working with DAWs without an external mixer. In practice it works great. For tracking lead vocals, I created a submix of the background tracks and sent it to two of my DAW's outs. These were routed to the

MQ's cue input. My vocal mic was routed to one of the mono inputs. Nice to be able to reach over for a knob to adjust the background-to-lead mix as I was tracking.

As mentioned, the MQ has a headphone amp. This feeds two front-panel jacks with accompanying level control. It also feeds a rear-panel XLR output for driving headphone breakout boxes. The amp can handle a load as low as 4 ohms — quite a few high-impedance pairs of phones, in other words. The amp offers plenty of level, and is clean.

Also built-in is a talkback mic, controlled using the included handheld switch. The switch cable terminates in a regular XLR, so if its 12' length isn't enough, you can use a regular mic cable as an extender. Turning on the talkback mic also dims the stereo cue by 12 dB. This option is internally switchable if "orchestra" style talkback is desired.

Last up is the meter section. There are two stereo meters, VU and digital, which each have their own XLR inputs. I routed the analog meter output from the Dangerous Monitor to the MQ's analog VU input, and the Monitor's digital meter output to the MQ's digital meter in. The mechanical VU meters operate as expected; the digital meters accept AES format input, and can accept sample rates up to 96 kHz. The digital meters show both average and peak levels.

Strengths:

- Provides necessary metering and cue functions
- Useful functions for creating headphone mixes
- Clean, powerful headphone amp
- Analog and digital metering
- Built-in talkback mic

Limitations: None to speak of

FINISH

You don't have to use the Dangerous boxes together, but as a team, 2-Bus, Monitor, and MQ work extremely well together, comprising all the essential functions of the master section of a console. The sound quality of all three is exemplary, and given all they do, they're very easy to connect and operate. If you're a DAW owner looking to solve summing and monitoring problems, these tools are for you. They don't come cheap, but they do the job extremely well.



Photo courtesy of Ed Dzubak, three-time Emmy winner and enthusiastic REALTRAPS customer.

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by Mitch Gallagher

Studio Tech StudioComm

Take control of your surround monitoring

Type: surround controller**Price:** \$2,799**Contact:** www.studio-tech.com**Inputs:** two 5.1-channel**Outputs:** one 5.1-channel**I/O:** DB25

Studio Technologies has been providing monitor control solutions for studios since 1992. Among the company's newest products is the StudioComm for Surround Model 78/79, a surround controller system that can handle two 7.1-channel inputs and one 7.1-channel output. The system comprises the Model 78 Central Controller, the Model 79 Control Console, and a 20' hookup cable.

CENTRAL CONTROL

The Model 78 Central Controller is a single-rack unit; its only controls are two sets of eight 15-turn trim pots for balancing the level of the inputs. The back panel has five D-sub connectors: one for each input, one for the output, one for the Model 79 Control Console, and the last for 5-volt GPI (General Purpose Interface) remote control signals.

CONSOLE

The Model 79 Control Console is where most of the action takes place. It's small

enough to fit anywhere. The front of the Console is dominated by a large volume knob with a 4-digit LED display indicating the relative output level in dB.

Across the top are eight buttons used to mute or solo the eight speaker outs, depending on how the mode switch on the upper left is set. Below the mute/solo mode switch are buttons for switching the inputs; if you hold these down, the corresponding LFE signal will be boosted by 10 dB. In the center of the Console are dim, mute all, "ref" (lets you store and jump instantly to a known monitor reference level, e.g., 85 dB for audio-for-video), and LFE Lowpass Filter (emulates processing done by some formats to the LFE channel). There are also two output mute buttons; one for the seven main outs, the other for the sub.

Rounding out the Console are four "Downmix" buttons. These let you check what a 7.1-channel mix sounds like when it's folded down to 5.1, LCRS (left, center, right, and mono surround), stereo, and mono.

BASS MANAGEMENT

The Model 78/79 features built-in bass management. This takes the form of 12 dB/octave filters on the seven main outs and a flat/12/24 dB/octave lowpass filter on the subwoofer output. Their frequencies can be set using jumpers and resistors inside the Model 78.

IS THAT IT?

If that were all the Model 78/79 did, most users would be satisfied. But the system goes beyond that. The operation of many controls can be customized and there's a long list of niceties. Just one: Dim can be set to reduce monitor level by 10, 15, 20, or 25 dB.

For most applications, the Model 78/79 will function just fine right out of the box. I connected the 5.1 outputs from my Pro Tools HD rig and reference DVD player, and the outputs from the Model 78 to my 5.1 surround monitor rig.

The system sounds great—there's no difference when you insert it in your rig. If you're not doing surround work exclusively the Model 78/79 may not cover all your needs. But if you're doing primarily surround, the Model 78/79 does the job well, and has the benefit of being highly configurable. **EQ**

THE MODEL 78 CENTRAL CONTROLLER USES DB25 CONNECTORS FOR I/O. YOU'LL NEED BREAKOUT CABLES.



THE MODEL 79 CONTROL CONSOLE PROVIDES COMPLETE CONTROL OVER YOUR SURROUND SYSTEM.



Strengths:

- Easy-to-use remote console design
- Integrated downmixing
- Level trim for two 7.1-channel inputs
- Built-in bass management
- Clean, transparent sound

Limitations:

- Configuring bass management requires opening the unit and moving jumpers and resistors

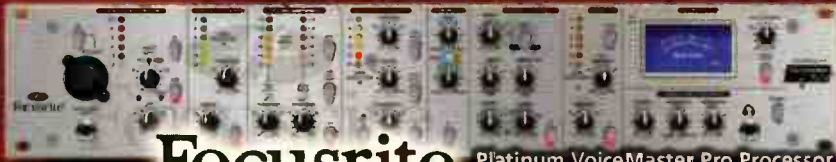


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World Radio History





by Craig Anderton

DigiTech RPx400

It's time to erase the line between recording and playing

Type: Guitar processor with USB computer interface

Platform for bundled software: Windows

Price: \$399.95

Contact: www.digitech.com

HARDWARE

Programs: 80 ROM, 40 RAM

Controls: Three footswitches, one expression pedal, five programming knobs, three buttons

Ins: XLR mic with phantom power and mic trim control, 1/4" guitar jack, balanced stereo line in, 1/8" external audio/monitor input, USB 1.1 (with 24-bit resolution), external footswitch

Outs: Stereo XLR, stereo 1/4" (with switchable speaker emulation), USB 1.1 (with 24-bit resolution), 1/8" headphone jack

Simultaneous effects: Up to 11

SOFTWARE

Type: Pro Tracks hard disk recording system, DigiTech X-Edit editor/librarian

Operating system support: Windows 98SE/ME/2K/XP

Driver support: WDM, MME

Soft synth support: DXi

FX support: DirectX

File support: WAV, AIFF, acidized WAV, OMF

File export: WAV, Acidized WAV, OMF

I've tried for 30 minutes to write an opener for this review. I wanted to encapsulate the RPx400 in one simple, easy-to-understand sentence from which the rest of the review would flow. (I bet DigiTech's marketing department would like to be able to do that, too!)

But I give up. The RPx400 is unlike anything else, although it comprises familiar elements. It's a floor box or desktop signal processor designed for live or studio use, but it's also an audio interface that streams four channels of 24-bit audio to a computer, and plays back stereo from your computer for monitoring through various outs, including a built-in headphone jack.

We're not done yet: it's a guitar-specific control surface for a sophisticated Windows hard disk recording program bundled with the RPx400. Arm tracks, go back over parts, go into record, and work the transport — all

hands-free — from the unit's footswitches. And there's a drum machine with 30 patterns for quickie backup, along with a phrase trainer that slows down licks without pitch shifting . . . and the ability to do re-amping. Essentially, the RPx400 integrates the functionality required for recording, signal processing, and live performance. Give it a task, and the usual answer is, "Sure, why not?"

Is it for beginner, intermediate, or advanced players? Well, the price makes it affordable for beginners, the functionality makes it useful to intermediates, and even experts will find the hands-off control a valuable tool for capturing inspirations. (Note to DAW manufacturers: please support the RPx400 as a control surface in your next revs, okay?)

No wonder I couldn't get this all into one sentence.

GOZINDAS AND GOZOUTAS

The sidebar lists the ins and outs, but note that you can use the guitar, mic, and stereo ins simultaneously, then send the mixed out to a PA while recording them into a laptop as four individual tracks, streamed as 24-bit audio over USB. For solo performers, this is hot. There's also a 1/8" jack that serves as a general-purpose monitor in, or can record 10 seconds of audio into the RPx400 for the phrase trainer feature.

There's more to the outputs than expected. For example, you can route the mic and line ins to the output without processing. Or with processing. Or with the current preset's delay and reverb modules. Also, you can route all the inputs to both output pairs but enable speaker compensation on only one of them . . . or both of



THE SOFTWARE BUNDLED WITH THE RPX400 IS IMPRESSIVE, STARTING WITH A FULL-FLEDGED HARD DISK AUDIO RECORDER THAT SUPPORTS LOW LATENCY WDM DRIVERS, SOFT SYNTHS, AND MIDI; IT CAN EVEN USE THE RPX400 AS A CONTROL SURFACE FOR RECORDING. ALSO INCLUDED: X-EDIT, A STAND-ALONE EDITOR/LIBRARIAN FOR THE RPX400'S SIGNAL PROCESSING FUNCTIONS.

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(and he did)

DAVE BEYER, GIG Magazine



THE HEART OF ANY GREAT SONG is a great vocal sound. With Antares's Vocal Producer, we've combined our world-renowned Auto-Tune Pitch Correction and TEC-Award-winning Microphone Modeler technologies with state-of-the-art vocal processing modules to give you everything you need to create stunning vocal tracks in any musical style.

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Live or in the studio, the AVP lets you instantly select from a large library of sounds. From gorgeously mellow to seriously twisted, we've included factory presets for a wide variety of vocal styles as well as an interface that makes it easy to create your own signature sounds.

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"I liked the way my voice sounded so much (using mic modeling, compression and a tiny bit of EQ) I think it lead to a better vocal... the AVP-1 provides the secret sauce of mic modeling and pitch correction... this box delivers the goods." CRAIG ANDERTON, EQ Magazine

AVP FEATURES

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- >> Antares Microphone Modeling
- >> Analog Tube Modeling
- >> Variable Knee Compressor
- >> Downward Expanding Gate
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Digitech RPx400

them. Or split the guitar to one set of outs, and the other inputs — as well as audio returning from the computer — to the other outs, with or without speaker compensation. There's more, but I'm starting to get dizzy.

THE PROCESSING

DigiTech's RP-series guitar processing is pretty mature; modules, connected in the following series order, include a pickup simulator, compressor, wah (controlled by the built-in expression pedal), whammy (a "bend pitch with expression pedal" processor), dual channel amp modeling section, 3-band EQ with sweepable mid (no bandwidth parameter, though), cabinet/mic simulator section, noise gate, a rich selection of chorus and modulation effects, delay, and reverb.

Although most of the effects are common, a couple effects make your guitar "speak." These are formant- rather than vocoder-based. SynthTalk is a standout, as it relates to the dynamics of your playing and can be very expressive. The result is sort of like an exotic bird speaking — you're not quite sure what it's saying, but it's saying *something*.

The expression pedal is assignable to one of umpteen different parameters within a patch, and you can change its function from wah to something else, hands-free, in real time. An A/B footswitch selects among two amp channels (with their own amp model, cabinet, modeled mic position, and EQ).

There are 40 factory and 40 "artist" ROM patches, along with 40 user (RAM) patches. I'm the kind of guy who thinks 128 user patches is a bare minimum. However, there are two mitigating factors: the ROM presets are pretty good, and there's a bundled editor/librarian program for additional program storage.

INSTALLING AND USING

The software, installers, and documentation get very high marks, but follow the instructions *to the letter*; the procedure differs slightly for different operating systems. I was up and running in minutes on Windows XP, getting about 30 ms of latency with MME, and 10.2 ms with WDM.

DigiTech's X-Edit Editor/Librarian is a useful, stable program that simplifies the editing process. Because the USB control is bi-directional, the RPx400's

display jumps to, and shows, edits made on-screen; but also, editing a RPx400 parameter is reflected on your computer. This is good stuff.

PRO TRACKS

The bundled hard disk recording software is stellar. Pro Tracks, developed with Cakewalk, is a remarkably full-function hard disk recording/MIDI program. It's DXi- and ReWire-compatible, handles acidized loops, imports AVI/MPEG/MOV video clips, opens OMF files, does automation, comes with several audio plug-in effects, and includes Applied Acoustics' Tassman SE virtual soft synth.

There's a limit of 16 stereo audio tracks (MIDI tracks appear to be unlimited; I stopped trying to reach a limit after creating 400 tracks). You can have up to 64 virtual main buses, but only two aux buses. Input monitoring is supported for playing live through plug-ins. Sample rate tops out at 48 kHz, but the lack of 96 kHz operation is likely not a deal-breaker for most people.

Arguably, the coolest part is that the RPx400 also shows up in Pro Tracks' control surfaces options. With this, the three footswitches control Stop, Return to Zero, Record, Play, and the ever-popular Undo. (The optional FS300 footswitch controller can take over the record functions, leaving the RPx400 switches for doing preset and amp channel control.)

There's some intelligence to this. If you press Record, Pro Tracks inserts a track, arms it, and starts recording — one button press! If you stop by hitting the Record button a second time, then hitting Record again will continue recording on the same track. But if you use the Stop switch to stop, the program assumes you're done with that track. Next time you hit Record, it will create, arm, and start recording on the next track.

If you hit Play, the track begins playing. Use Play to stop, and there's an automatic Return to Zero. But use the Stop button, and if you hit Play, playback resumes from where you started.

What this all means is that you can arm, record, loop record, play back, and undo tracks in rapid-fire succession; if you want to lay down multiple takes of a guitar solo or vocal, this is as fast as it gets.

Also note the plethora of routing options — guitar processed through one USB pair, split with dry mic and dry guitar each down one channel of a stereo

pair, re-amping where you process a recorded guitar track through the RPx400 and re-record it, and so on.

I couldn't get the latency below 10 ms but this is usually irrelevant, because you'll be monitoring the processed sound you're recording as it goes into the computer, not after it passes through the system. However, for live playing through plug-ins (the RPx400 can't provide every possible effect you might want), you may notice a slight slapping effect.

YES, SOMETHING NEW

This is a surprising box. Someone really scoped out what a guitar player needed to get involved in hard disk recording on a painless level, from installation, to interfacing, to effects, to recording. The only caution is that the sheer number of options requires some quality time with the manual. For example, I initially thought most of the guitar effects had too much high end — until I realized I hadn't enabled speaker emulation. Doh.

Granted, if you already have a good guitar processor, audio interface, hard disk recording program, and control surface, then the RPx400 is redundant. But if you don't, no one box delivers all these functions at this price point . . . and makes it this easy to get into guitar-friendly hard disk recording. **EQ**

Strengths:

- Useful, comprehensive signal processing
- Footswitches provide "hands-free" recording functions
- Excellent, pro-level bundled software
- Clear, non-intimidating documentation
- USB interface can simultaneously stream four tracks of 44.1 kHz, 24-bit audio to the computer, and monitor two tracks from the computer
- Mixable mic, guitar, and external stereo input
- Built-in drum machine (can respond to MIDI tracks in Pro Tracks)

Limitations:

- ASIO and Mac support not yet available
- Only 40 user presets
- 16 stereo audio tracks maximum in Pro Tracks software
- Lowest possible latency is around 10 ms


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Alto BVerb

Big reverb for a little price

by Steve La Cerra

Type: Rackmount digital effects processor

Price: \$179

Contact: www.altoproaudio.com

Channels: 2 (stereo)

I/O: Balanced XLR

Effects: reverb, delay, tremolo, chorus, flange, rotary speaker

The BVerb from Alto Professional Audio is a rackmount digital effects processor with algorithms for hall, plate, and room reverbs, stereo and multitap delays, tremolo, chorus, flange, and rotary speaker simulation.

Front panel controls include pushbuttons for up, down, enter, escape, edit, utility, and digital mix on/off. LEDs indicate process overload, saving preset, edit mode, utility mode, and digital mix on/off. Separate knobs control I/O levels and the wet/dry mix. Pushing the "digital mix on/off" button essentially adds a "direct" parameter to the programs, allowing storage of the balance between effect and dry sounds (wet/dry balance can always be changed using the front-panel control).

Rear-panel analog I/O is on balanced XLRs; additional jacks are provided for MIDI in/out/thru and a standard IEC power cable. A rear-panel mono switch is provided for situations where a single input will be used — in which case the unit creates stereo output from mono input.

Proper gain structure is important when using the BVerb: If you're not hitting the input hard enough, cranking up the return from the unit may add noise to your signal as the unit's outputs produce a low-level hiss.

As I auditioned the BVerb on snare drum at a session, I

liked what I heard. The reverb presets are useful, and most of them sound good to excellent. "Reverse Long G" (a gated verb) has a cool belching/reverse, industrial gated room. It was weird and wonderful, inspiring the artist to record some drum loops with the effect. Interestingly, the time parameter in this algorithm alters the *pitch* of the verb, while manipulating the density parameter elongated the early reflections.

A few presets were a bit bright for my taste, easily remedied by editing the high-frequency damping or lowpass filter parameters. Changing a parameter causes the "saving preset" LED to flash, indicating that you may want to save your modifications. The BVerb has 128 memory slots; the first 64 are factory presets, and the rest are for the user. Some parameters are unusual such as "Tuning" (which seems to increase feedback in the later reflections) or "Fast Reflections" (which produces more of a slap-back effect on the reverb). To store the edit, push utility, scroll to Store Preset and select a slot. When you press enter, a cursor blinks under the first character of the title, prompting you to name the patch. Preset titles are limited to six characters, odd in light of the fact that the 2x20-character display has plenty of room. After editing a parameter, you can move to

the next parameter by pressing either enter or escape, but beware: If you press escape the value of the parameter you just edited jumps back to its saved value. To retain the new value, hit enter, *then* scroll to the next parameter.

Some aspects of the BVerb's operating system are quirky. Scrolling occurs at a slow, fixed speed. The stereo delay algorithm has the ability to link channels but the link doesn't work, and (worse) linking locks out access to left channel parameters. Many parameters use an arbitrary scale of 0 through 127, as opposed to more relevant indicators such as decay time in seconds. It would be nice to see these issues addressed in a future software rev (version 1.2 was in the review unit).

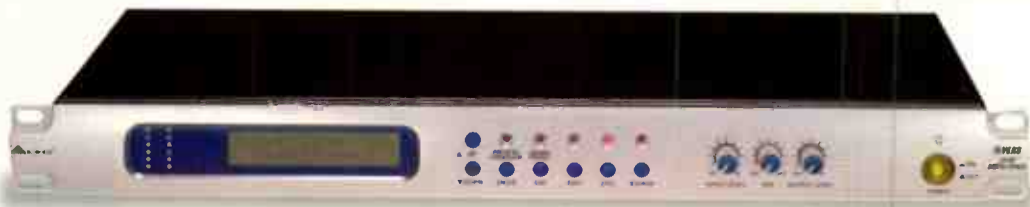
Sonically speaking, Alto's BVerb is a very good processor. Along with grain-free reverbs, the delays are clean, and the flange and chorus effects will prove useful. It's amazing how much you get for the money . . . other manufacturers will have their work cut out trying to beat this one. **EQ**

Strengths:

- Excellent bang for the buck
- Sturdy construction
- Good-sounding effects

Limitations:

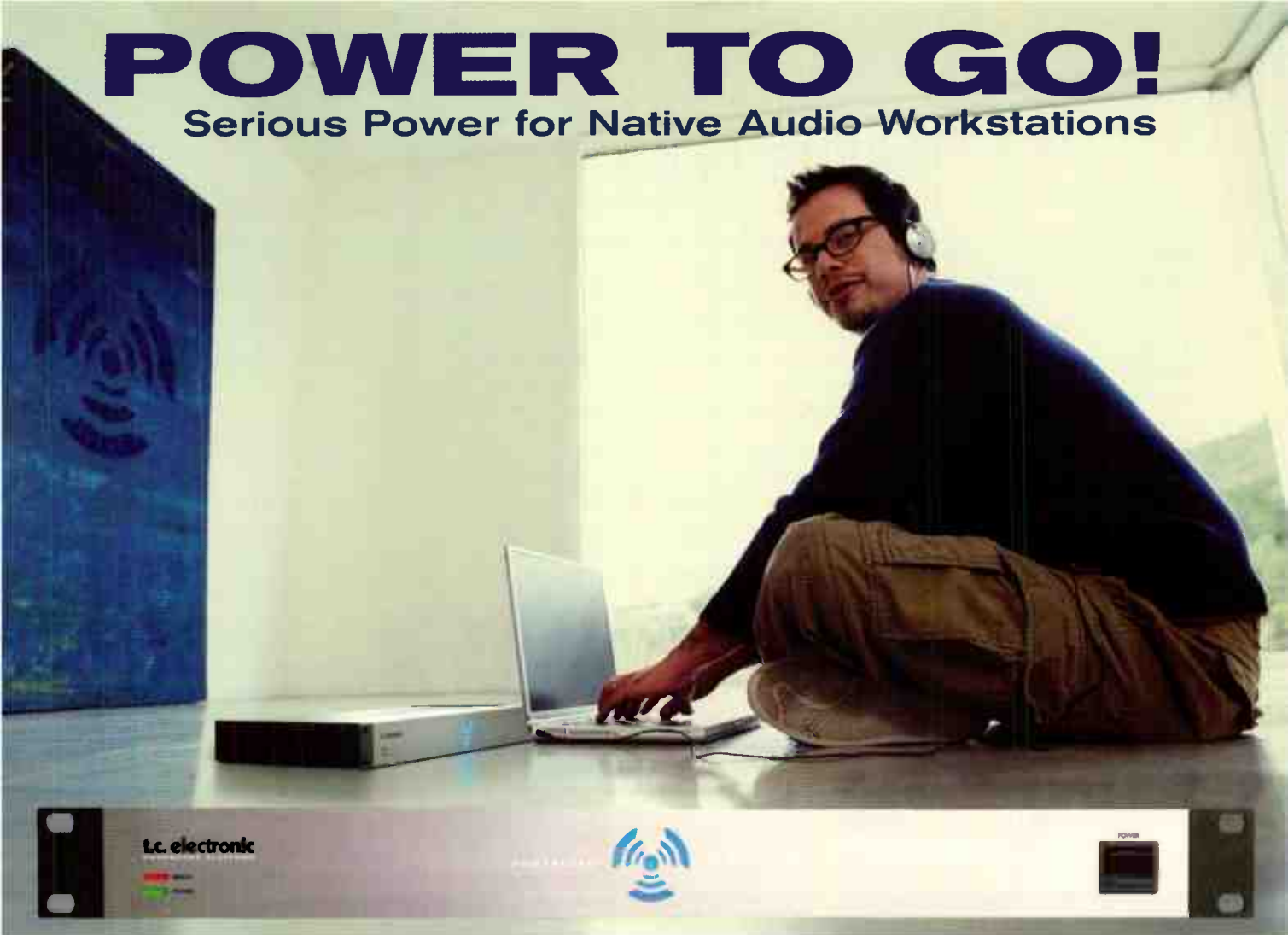
- Awkward user interface
- Stereo/mono switch on rear panel
- No bypass switch



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RØde NT1-A

by Mitch Gallagher

Contact: RØde, 877-328-7456,
www.rodemic.com
Price: \$349

Strengths

- Amazingly low self-noise
- Performs way beyond its price point
- Open top end, smooth midrange, rich bottom
- Includes shockmount

Limitations

- No pads or filters

RØde has been on a mission to offer the world high-quality mics at economical prices. Their latest offering is the NT1-A, a direct descendent of the NT1, but with improvements to sweeten the deal.

Chief among the enhancements is the NT1-A's self-noise of 5 dB (A-weighted) — an amazingly low figure at any price, let alone in a mic in the sub-\$350 price range.

But the NT1-A is more than just quiet. This solid-state condenser offers excellent bang for the buck. It's a large-diaphragm

design with a cardioid polar pattern; that's it — no pads or filters or anything else. But then again, that's what you need for 95% of project studio recording applications.

With any mic, all that really matters is the sound quality. And the NT1-A delivers big time. I compared it against mics ranging in price upward of \$3,000, and I was extremely impressed with how well the NT1-A held its own. There are differences, but are they worth 10 times the price?

For vocals, the NT1-A is fat, with plenty of bottom, good presence, and an open, detailed top end. On acoustic guitars, the tone is full, with excellent clarity and creamy midrange. On percussion, its top end delivers good transients, and a smooth decay with no strident

overtones. On all sources, the NT1-A offers good dynamic response. The lack of a pad might be a problem if you're tracking super-loud sources — but I had no problem with distortion even on loud amps.

Then there's that self-noise . . . or should I say lack thereof? No matter what I tried, I was unable to discern any hiss or noise that I could ascribe to the mic itself. Suffice it to say that few — if any — of us have a quiet enough studio to where the self-noise of the NT1-A would be an issue!

If you're looking for a reasonably priced large-diaphragm condenser microphone, and would rather put your money toward quality than bells and whistles, the NT1-A is just what you've been waiting for.



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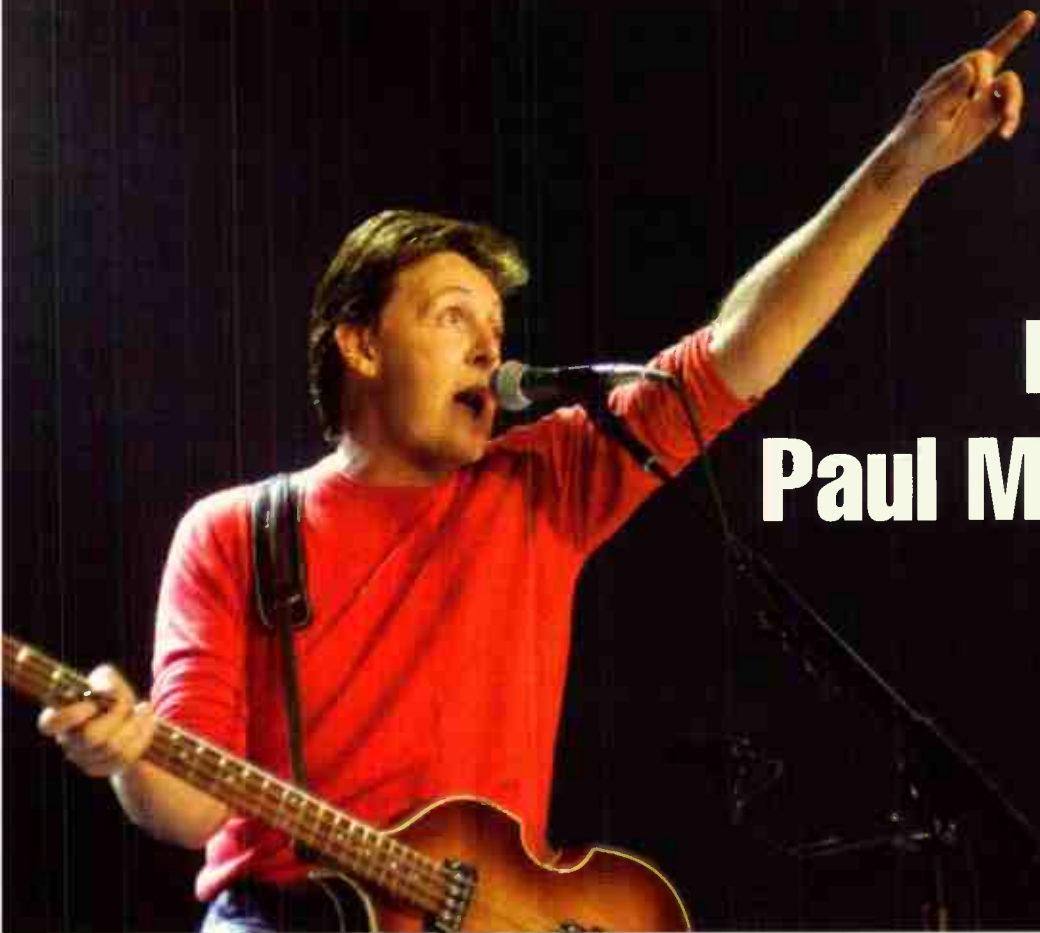
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by Craig Anderton

CreamWare Six-String Plug-In

Price: \$249

Contact: CreamWare, www.creamware.com

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Strengths:

- Versatile string modeling produces a wide range of sounds
- Very useful amp modeling, chorusing, and stereo delay
- Excellent presets
- Clean, organic tone quality

Limitations:

- Relatively heavy load on the card's DSP

Six-String is a guitar string modeling plug-in with two main models, acoustic and electric guitar. It's available only for CreamWare's cross-platform SFP 3.1-based product line (Luna II, PowerSampler II, Pulsar XTC, Pulsar II, PowerPulsar, and Scope), which uses hardware DSP acceleration to turbocharge your DAW of choice. (Six-String is also included in the Noah DSP-based rack instrument.)

As a guitarist, it may seem strange that I'm into a guitar

plug-in. But Six-String is a *perfect* guitar — the strings are always brand-new (if I want), there are no dead spots on the neck, and the virtual mics generate no noise.

Perhaps more importantly, three pages of parameters allow creating sounds that are both guitar-like yet totally original. Without even trying hard, you can create some gorgeous ethnic-sounding instruments — or just remove the string's damping for guitar notes that sound like they were played on a planet with 1/20th earth's gravity.

The main editing page offers basic parameters: string type, harmonics, pluck characteristics, damping, etc. The second page goes deeper, with pickup parameters, pitch envelope, pitch LFO, slap effects, resonance effects, and the like; a page of effects

adds amp modeling with EQ (for the electric guitar), chorus, and stereo delay.

However, note that Six-String isn't shy about sucking DSP power. With a PowerPulsar, I was able to load six instances (each playing one voice) for MIDI guitar, but that didn't leave a lot of "DSP headroom." One instance with 16 voices, played keyboard-style, used up about the same amount. (Of course, you can free up DSP by rendering the audio to disk; keep the MIDI track that drives the plug-in, in case you need to re-edit later.)

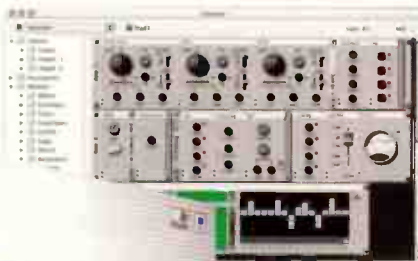
But raw DSP power is the only way to get this kind of breathtaking sound quality. A downloadable demo (PC only) is available that times out after 60 minutes . . . which is about 58 minutes longer than it took to get me hooked! **EQ**



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COMING IN THE AUGUST ISSUE OF EQ

ON THE COVER: THE GUERRILLA PC

Whether for networking, virtual instruments, VST System Link, or just for Mac fans to run PC-only software, it's always useful to have another fast Windows computer in your studio's gear arsenal. Jon Chappell tells how to build a screaming fast PC for a mere \$400 (!) and a few hours' time.

ALSO FEATURED: PRODUCER JOHN ALAGIA

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by Mitch Gallagher

Aphex Acoustic Xciter

Price: \$199
Contact: Aphex, www.aphex.com

Strengths

- Specifically tuned to acoustic instruments
- Sounds great when used as a DI
- Works with a wide range of AC adapters
- Sounds great on other instruments
- Effect independently switchable for instrument and direct outs

Limitations

- Takes too long to change battery



It's easy to forget just how revolutionary Aphex's Aural Exciter process was when it was introduced. I was blown away when using one for the first time — suddenly the sound was clearer, more defined, and . . . *alive*. Over the years, the process has expanded to include "Big Bottom," low-end enhancement. Now Aphex has announced three new stompboxes, the "Xciter"

series, which bring the Exciter and Big Bottom to acoustic guitar, electric guitar, and bass.

The three pedals are identical, except that their controls are "tuned"

differently; the acoustic guitar box also features higher input impedance to handle piezo pickups.

The Acoustic Xciter has 1/4" instrument in (switchable for active or passive pickups) and out, and an XLR direct out (with ground lift). There's also a switch for turning processing off on the XLR out, allowing you to use the box as a normal DI.

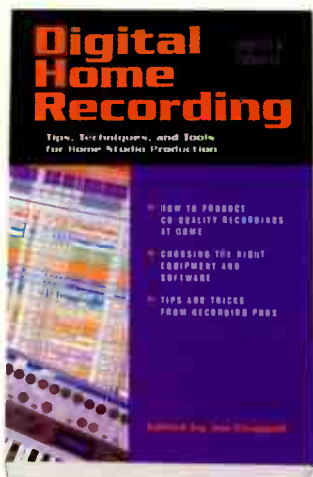
Four knobs comprise tune and blend for both the Big Bottom and Exciter effects. There's also a footswitch that bypasses processing for the 1/4" out (but not the XLR).

The Acoustic Xciter can work wonders on direct acoustic guitar signals. In blind tests, listeners picked the Xciter signal over the dry direct guitar every time. "Fuller," "richer," "brighter,"

"clearer," "more alive," were among adjectives used to describe the effect. The Acoustic Xciter also excels as a straight DI — its sound is round and full, and seems to tame the piezo "quack" so many DIs struggle with.

While the Acoustic Xciter is aimed at acoustic guitar, it also works on other instruments; I had good luck using it with a Telecaster and Les Paul for direct recordings, and absolutely loved it on a fretless bass track. Suddenly the bass was smooth and fat, but with outstanding harmonics and detail.

For live use, the Acoustic Xciter is a must. For studio, you'll find it a versatile and effective tool, both for acoustic guitar and other instruments.



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ISBN 0-87930-732-3, \$24.95

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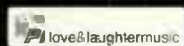
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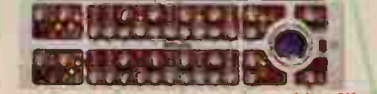
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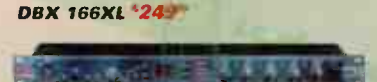
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Sounds



TOONTRACK Drumkit From Hell

Contact: Toontrack, U.S. dist. by East West, www.soundsonline.com

Format: 2-disc set (audio+CD-ROM with EXS-24, Battery, HALion, DR-008, Giga, and LM-4 formats included)

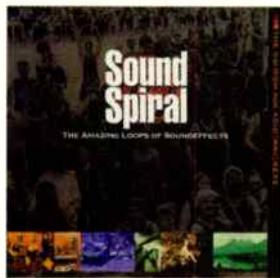
Price: \$99.95

More than just a loop library, *Drumkit From Hell* is loaded with a complete set of individual kit instrument samples, so you can program your own patterns or fly the hits in to replace/enhance existing drum tracks. One of the key features of *DFH* is its use of velocity switching. The end result is an extremely playable set of sounds.

Essentially, a single kit — a Sonor Designer Series Maple light shell — was sampled for the source material. A few additional cymbals, along with a handful of snares are included, so you're not locked into one sound entirely. Recording quality is uniformly top-notch, with both close- and room-miked versions provided, and individual instruments are presented in several ways. Snare drums with snares on and off, for instance. There are varying degrees of muted and ringing kicks, with what sound like different mic choices. All of this makes it easier to match the recording space

vibe to other recorded tracks such as guitar. The instruments selected for this library were tuned and sampled in such a way as to make them useful for a wide range of styles. Additionally, you can mix close and ambient samples for a more wet or dry sound.

There are other drumkit libraries out there, but to my knowledge none of them comes close to the usability of *DFH*, plus the recording quality is excellent. If you're the type who prefers programming to using sampled loops or tends to augment existing live drums with samples, this title should be on your shopping list. —JOHN KROGH



DISCOVERY FIRM Sound Spiral

Contact: Discovery Firm, www.discoveryfirm.com

Format: multi-format CD, Acid, Wav, REX 2

Price: \$38

Last month we reviewed a niche library from Discovery called *8-Bit Family* — a fun, blast-from-the-past vintage video game collection. This month's reviewee from the same company is also a specialty product, but should be attractive to a wider audience. For *Sound Spiral*, Discovery has taken the "greatest hits" of their best-selling

Sound Effects multi-disc series, and compiled them onto one handy and affordable CD. Six main categories are provided: Life, Industry, Nature, Traffic, War, and Animals, plus a bonus folder called Mix Loops. Need the sound of a cuckoo clock or heart beating? How about a helicopter, explosion, applause, airport ambience, etc? *Sound Spiral* is your one-stop shop for such material.

The "Life" folder, for example, offers the sounds of door slams, punches, footsteps, coughs, sneezes, groans, laughter, taps, pouring liquid, baby squalls, vacuum cleaner noise, window polishing, and a few that are borderline comedic/disgusting: farts and belches, anyone? But there's a value-added feature of this collection that might not be immediately obvious to shoppers: Almost anything on this disc can be used for more than its original intended purpose — making rhythm loops from the Ping-Pong sounds, for example. This concept is demonstrated well on the aforementioned Mix Loops. Check out what Discovery has done, then go to town building your own custom effects loops. Use a sneeze as an open-hat, a basketball bounce as a kick, you get the idea.

Not all of the files are pristine. In fact, a few are just downright bad, with cassette-grade dropouts and noise, but fortunately the majority of material is acceptable. Hey, for \$38, and considering how much is packed in here, it's hard to complain too loudly.

A couple of years ago, I was working on a soundtrack project and needed samples of water dripping. The deadline for this project was intense, and I didn't have much time to spend on something so minor. Sure wish I had *Sound Spiral* back then. Chances are, I'll need a few things from this collection in the future, and will be glad I didn't have to stop everything to record a dog bark, a car engine, or you name it. —GREG RULE



AMG NEIL CONTI The Dark Side of the Groove

Contact: AMG, www.samples4.com

Format: audio, WAV, REX, EXS24, Akai Z/S5000 Series, HALion

Price: £60 (approx. \$96)

Loop CDs are — forgive the cliché — a dime a dozen, so when another one makes its way onto my desk it has to have something special for me to cover it in these pages. Make no mistake, *Neil Conti — The Dark Side of the Groove* warrants the ink. I can sum it up in two words: tone and vibe.

This loop library (I reviewed the audio version, but other formats are available) is brimming with inspired, fat beats that stick close to the 93–140 bpm

range, with a few samples straying above and below. What makes these grooves so palatable is the fact that they were tracked with a decidedly "analog-ish" approach — 2" tape and choice outboard gear contribute to the overall retro-sounding girth.

Style? That's tough to comment on because Neil moves effortlessly from drum-n-bass to rock to world beat and beyond. This isn't a specialized collection; it's about what Neil, who's worked with Bowie, Jagger, Annie Lennox, and more, felt on whichever day he went into the studio.

If I were to pick some favorites I'd settle on "LazyDogRock" for its sweaty '70s beat and "Lazy Stargazer" for its deep pocket and ambient feel. Really, there's no filler.

On the whole, these loops are live, raw, sometimes twisted and tweaked (thanks to remixes by Brian Eno), and eminently useable. I wouldn't necessarily recommend *Dark Side* if you're just putting together a sample collection and you're looking for a specific style, but if you already have a dedicated library in whatever style you work in, this would make a great addition to your collection.

—JOHN KROGH

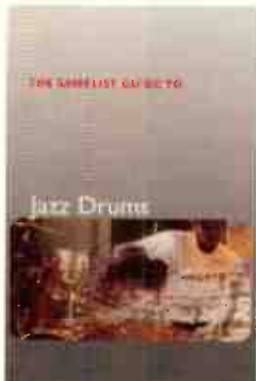
POWERFX

The Samplist Guide to Jazz Drums

Contact: PowerFX, www.powerfx.com

Format: 1 CD with WAV files

Price: \$49



The rate of change in musical fashion continues to accelerate (anyone remember Two-Step?), which makes finding fresh sounds crucial. But sometimes the best place to find fresh is digging up nuggets from the past.

This CD, with drummer Ralph Peterson, offers folders with different styles — New Orleans marches, Elvin Jones-type striking offbeats, Steve Gadd funk, mambo, bossa nova, brush work, Gene Krupa tom riffs, and more. A Tools folder includes basic brush and cymbal patterns, fills and solos, snare rolls, hits, etc.

The recording quality seems to want to emulate the "wooly" type of drum sound on old Verve recordings. I found they snap into current tracks better with a slight cut at 300 Hz and small upper midrange boost. Also, some tracks have phasing issues, mostly with cymbals, due to the multi-miked setup (gee, just like the old days); and unfortunately, the files aren't Acidized. But there's a major bonus: Windows Media videos where Peterson discusses a style, then plays. These

give tremendous insights into playing techniques, and useful background.

Unlike simpler, dance-oriented loops, these aren't designed to build a tune's foundation. But they're great icing on the cake, they complement rap/hip-hop superbly when slowed down a bit, and the CD as a whole will broaden your perspective if you're not familiar with some of the giants of jazz drumming.

—CRAIG ANDERTON



ZERO-G

Beats Working

Contact: Zero-G (www.zero-g.co.uk), exclusive dist. by EastWest, 800-839-8339, www.soundsonline.com

Format: 11-disc set; 9 discs of 24-bit multitrack Pro Tools session files, 2 CDs of 16-bit audio/Acidized WAV discs; 2-disc set available separately as well

Price: \$495 (full 24-bit set); \$129.95 (16-bit stereo only)

With so many drum libraries on the market, developers are searching more aggressively than ever for ways to innovate. Zero-G has done just that with a massive bank of acoustic drum loops presented in a special 10-channel format (ready to mix to 5.1 or to stereo). Recorded at Abbey Road studio and

Ross says



"I've used my Royer's on every recording I've done since 1998. These mics have made a huge difference to me in my quest for real sounding records. From blues to heavy metal, I keep finding new and effective ways to use the mics and by far they have become my main electric guitar mic. I just finished producing and engineering Ziggy Marley's new record and single and the Royers are everywhere. I used them on the drums, organ, percussion, the four piece horn section and of course the guitars. I brought in my old friend David Lindley to play his arsenal of stringed instruments and he was very impressed with the size and detail translated from the mics. 'Irie!' I don't look back now, only forward and the bottom line is, I won't ever make a record again without these mics."

Ross Hogarth (Grammy winning Producer/Engineer - Ziggy Marley, Gov't Mule, Keb Mo, Coal Chamber, Jewel, Roger Waters, Black Crowes)



Visit royerlabs.com to look in on Ross in the studio and see some of his electric guitar setups.

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engineered by Haydn Bendall, the cleverly named collection features the expert drumming of Ralph Salmins, whose credits include Tom Jones, Madonna, and Björk, among others.

This is an exhaustive and smokin' collection of loops: 11 CDs of beats and hits in Pro Tools session format (stereo mixes in audio and Acidized WAV are also provided). In the Pro Tools files, each loop comes up as ten discrete channels: center, L/R close-miked, rear surround L/R, near ambient L/R, far ambient L/R, and sub. The styles range from brushed ballads to jazz, pop, rock, and funk. Odd time-signature patterns are included as well.

Prepare yourselves for some thick, meaty, solid beats with attitude. "Salmins displays a command of many different feels on a drool-worthy collection of vintage drums," says Ken Hughes who reviewed the library for EQ's sister mag *Keyboard*. "Bendall captures their character expertly. The tones and grooves really are luscious. I had a blast taking the rear channels or the far ambient channels and applying freaky processing while leaving the center and front L and R channels alone. Having all this material opens up many creative possibilities."

The only real negative I can say about an otherwise brilliant collection — in the loops I auditioned, I spotted an occasional flub. "Chrsgvr1" [105 bpm], for example, has a noticeable kick-drum flum on beat 3. Zoom in, and you'll see it in the waveform. This can be easily fixed, but it's somewhat surprising that the producers let this slide, considering the rest of the loops I heard were so stellar.

All things considered, "this is one of the most impressive and eminently useable drum loop collections I've heard from a tone, taste, and recording-quality point of view," Ken summarizes. And I second that. *Beats Working* is a monster library from top to bottom, front to back.

—GREG RULE

Calling all EQ readers! We're taking an informal poll, and want to know what sample CDs/libraries are most important to you. What current titles do you value most, and what do you hope to see released in the future? Send your thoughts to gregrule@musicplayer.com.

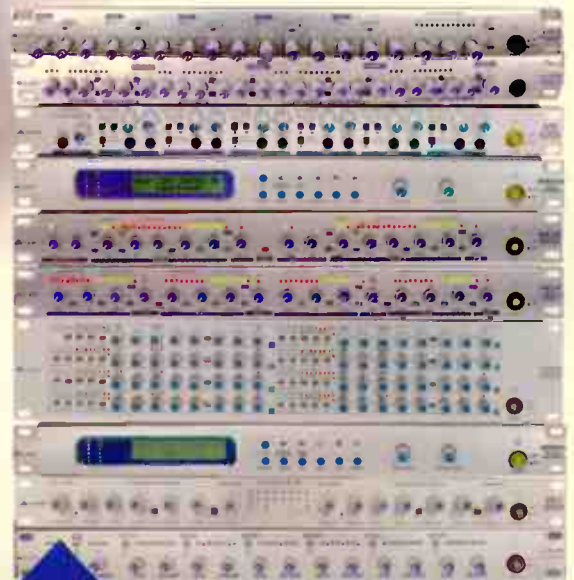
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World Radio History

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COMING ATTRACTIONS

Drawmer M-Clock

by John Krogh

Keep all your digital sources in sync — clock inputs not required

What is it? A word clock generator and distributor with relocking/sample-rate conversion.

Who needs it? Those who want to interface digital gear with or without word clock inputs.

Why is it a big deal? M-Clock not only generates and distributes clock signals around your studio, but it can also accept four digital signals from devices that lack clock inputs. M-Clock will re-clock and synchronize the signals to the rest of your system.

Shipping: TBA

Price: \$1,500

Contact: Call Transamerica Audio Group at 702-365-5155, or visit www.transaudiogroup.com

As we add more and more digital gear in our studios, the issue of syncing everything to a common clock becomes increasingly important. Several manufacturers offer word clock generators and distributors, but these don't necessarily address the problem of digitally interfacing gear that lacks word clock or other type of digital input, some form of which is (generally speaking) required for keeping the output signals in digital sync with other devices in a system. To solve the problem of interfacing and synchronizing such "clock-less" devices into larger professional digital setups, Drawmer has developed the M-Clock.

Yes, it can generate and distribute low-jitter word clock signals to gear in your studio, but M-Clock has a lot more going on than this. For starters, it features four digital audio input channels with real-time sample rate conversion. This is huge for a couple of reasons, not the least of which is it means

you can patch the output from gear that only has a digital out (such as some synths, mic pres, and so on) into the M-Clock — it will re-clock the input signals so they're in sync with the master clock. The signals are then sent to M-Clock's digital audio outs (more on these below), allowing you to patch the audio into other gear in your studio — everything will be synced to the master.

The advantages of locking all devices to a single clocking source, and of combining word clock with multiple input channels of synchronized sample-rate conversion, are significant: By providing a single timing reference source for all digital devices, whether professional, "prosumer," or consumer, M-Clock's clock helps maintain optimum stereo imaging, lower noise, and lower distortion.

On the output side, M-Clock boasts eight channels supporting 44.1 kHz, 48 kHz, 88.2 kHz, and 96 kHz sample rates, with two channels additionally supporting 176.4 kHz and 192 kHz, and another two

channels offering 256Fs or Superclock synchronization — all on BNC.

For devices that lack word clock connections such as consumer MD recorders, budget-oriented effects units, samplers with digital I/O, etc., M-Clock also features four AES11 blank frame sync outputs (44.1 kHz–96 kHz) for providing synchronization through each device's digital audio inputs using a "black" signal that carries no audio information.

All sync output choices are selected via push button switches on the 1U front panel, which also sports four optical (TOSlink) digital audio outs and a single S/PDIF coaxial and optical input. On the rear are the three remaining audio inputs (two AES/EBU on XLR and one S/PDIF on coax), along with the AES11 outs. As if this isn't enough, you'll also find an additional four AES/EBU and S/PDIF outputs on XLR and coax, respectively. In short, the M-Clock has every type of digital output you're likely to need.



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COMING ATTRACTIONS

M-Audio FW410

by Greg Rule

FireWire audio and MIDI I/O

What is it? A 4-in/10-out FireWire recording interface.

Who Needs It? Computer recordists who need to get audio and MIDI in and out of their machines; especially well-suited for laptops and mobile rigs.

Why is it a Big Deal? Price, performance, portability.

Shipping: mid-July

Price: \$499

Contact: M-Audio,
www.m-audio.com

Attention DAW users: Another hot FireWire I/O box is about to enter the market. The first sighting of the M-Audio FW410 came at the Anaheim NAMM show earlier this year, but now, on the verge of its official release, we thought we'd give it a more proper spotlight. If you need audio I/O, MIDI I/O, something sleek and portable, and are looking at the under-\$500 price range, the FW410 should be right up your alley.

M-Audio rolled out a similarly named PCI-based product, the Delta 410, last year. It banged big for the buck, offering 24/96 audio and surround-handling capability. The new FW410 offers an equally impressive feature set, but ups the convenience factor by removing the PCI card from equation and, inasmuch, invites laptop users to the party.

The FW410's 4-in/10-out configuration allows you to bus signals to multiple channels of an analog mixer or multi-channel monitoring system; surround mixes of up to 7.1, for example, can be driven through this box. Software-controlled DSP handles all internal routing and mixing.

Here's a useful feature that's often missing from I/O boxes: two headphone outputs with dedicated volume controls. How many times have you tracked remotely with a collaborator and had to cobble together a decent monitoring/playback system on the spur of the moment? Cheers to M-Audio for including this in FW410. Grab your laptop, a FW410, two sets of headphones, and you're ready to roll.

Let's hit some of the key highlights of the FW410 not already mentioned: two

high-speed FireWire ports; two analog input channels, each featuring line inputs, mic/instrument preamps with 66 dB of gain, level controls, signal/clip LEDs, 20 dB pads, and 48V phantom power (globally switched); eight line outputs with signal/clip LEDs (unbalanced 1/4" at -10dBV); digital I/O with S/PDIF, AC3, and DTS; MIDI I/O (one input, one output) with bypass for stand-alone use; bus-powered (6-pin FireWire only) or via AC adapter (included); low-latency software monitoring; zero-latency direct hardware monitoring; software-assigned rotary encoder; frequency response: 20-40 kHz +/-1dB; -104 dB signal-to-noise; 108 dB dynamic range (A-weighted); THD + N: 0.00281% at 0 dBFS; can be used with external battery supply for portable applications.

Let's tip our propeller-beanies to M-Audio for launching a product that looks like a home run. Stay tuned for an official EQ review in the near future.



"Awesome..."

Don "Turk" Schell, Front of House for Lucinda Williams, Ryan Adams

"Best kick drum mic I've ever used. Replaced my kick drum mic I'd been using for 15 years!"

Paul Rogers, Front of House
George Strait

"The D6 was designed with just one goal in mind, to be a no-compromise contemporary kick mic... If you want a painless way to get an absolutely rocking professional sound with a ton of serious beef on the bottom and that Lars-type 'click' on the top, then this is the stuff."

Mark Parsons, Modern
Drummer

"Every day in sound-check we wrestle with that first channel. We know the ideal mic for any application is one that sounds natural with no EQ. The D6 is the 'swift kick' we've all been waiting for. Thanks Audix."

Mark Frank, Monitor Engineer
L.A. Jazzy

"The introduction of the D6 from Audix has made an impressive impact. We've had many requests from high profile drummers to install them in their custom kick drums using our Mxy Mking System..."

Ronald May

"Audix continues to impress us with its latest kick drum mic." 2003 PAR Excellence Award Winner, Pro Audio Review

"I am extremely happy with the D6 as I have been looking for a excellent sounding Kick mic. It is great to finally find a dynamic kick mic that has clean clear low end without that "unnatural resonant low boost" that so many so-called "Kick Mics" have."

Dave Rot, Front of House,
Red Hot Chili Peppers

"The D6 was awesome right out of the box. In a recent TV performance with Lucinda Williams, the D6 shook the ground to the point where the high definition cameras men asked me if I could please high pass the beam!"

Don "Turk" Schell,
Front of House
Lucinda Williams, Ryan Adams



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GEORGE PETERSEN, MIX MAGAZINE

"The D6 delivers a crisp, modern sounding kick sound right out of the box and is also a useful mic to have in the locker for bass miking."

Marcus Ostrowski
Gig Magazine

"With the D6, attaining an authentic kick sound requires no effort so I don't need to spend my time researching crossover points and facking at EQ's."

Steve Sessity, Mobile Engineer
Real Image Recording

"The first time I put the D6 in our drummer's (Rickie Fister) kick drum was in sound check at one of our gigs. We didn't even get through the first 8 bars when he asked what I did to the kick drum sound. He said it was striking the whole stage and that he could really feel the improved low end. The D6 is now part of our sound."

Paul Middleton,
Front of House, Barne Raitz

"Love the D6 sounds so natural and does not color the sound at all. It literally took me 2 minutes on the first day of tour to get Matt Cameron's kick drum sound and I've not messed with it since."

Karin Keyes, Monitor Engineer
Pearl Jam

"In my 18 years of doing this, I have never received more compliments on my kick drum sound than I do now. I only travel with three things: two pieces of heavy English outdoor gear and an Audix D6!"

Chris "Stu" Sullivan,
Front of House, Jaci Velasquez

"I like the fact that the D6 has all the lows and can handle the SPL of large, low frequency drums, but still allows the drum to sound the same as it does acoustically."

At Blue Man Group, we use many drums with frequency ranges that go even lower than average kick drums... the D6 does a great job of reproducing them accurately."

Ross Humphrey,
Sound Supervisor,
Blue Man Productions

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World Radio History



Old Formats Never Die, Pt. 1

IT

seems like I'm getting more and more material from the early days of digital that needs to be remastered or remixed. The formats I'm dealing with are Sony PCM-10 stereo, PCM-F1 stereo, PCM 1610 stereo, PCM 3324 24-track (pictured right), Mitsubishi X-80 stereo, Mitsubishi X-800 32-track, 3M 32-track, 3M 4-track, Sound Stream 8-track, and DAT stereo. There are some quirks in these early formats that you should know about and be able to correct for. Sample rates, bit depth, DC content, and pre-emphasis were basically ignored in the '80s, so we must deal with it now if we want to salvage the recordings for archiving or re-release 20-plus years later.

Knowledge of yesterday's technology can save you today.

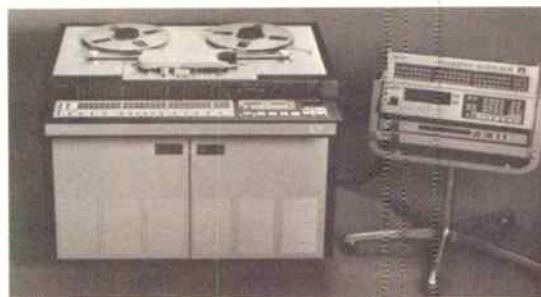
these characteristics and correct for them when updating the format for current use. Here's some background on these parameters.

Sony's early stereo PCM digital recorders were based on videotape machines for digital audio storage. The data was recorded as black or white dots in the videotape scan lines. The same data was duplicated on the odd and even fields of the video image. Since video ran at a frame rate of 29.97 frames per second, the data rate ended up being 44.056 kHz. If you ran the video machine from a 30-frame source, the data rate was 44.1 kHz. 44.1 kHz was adopted for the CD sample rate because it was the common denominator between PAL video at 25 frames per second, and the pulled up NTSC video at 30 frames per second. Early machines such as the Sony PCM-10 used 29.97 as the clock, so those machines recorded audio at 44.056 kHz. The PCM-10 was a 14-bit recorder.

When the Sony PCM-F1 was introduced for consumer digital recording around 1982, the NTSC versions recorded at 44.056 and the PAL versions recorded at 44.1 kHz. Many companies jumped on the consumer digital bandwagon and built videotape-based recorders. The standard was for 14-bit recording, although Sony processors (and Nakamichi, made by Sony) allowed you to switch to 16-bit recording with a loss in error correction. There was only so much room on the videotape for those black and white spots, so you had to make a choice between error correction and resolution.

When professional machines started showing up on the market it looked as if there was going to be a sample rate war. 3M offered a 32-track and 4-track machine that recorded at 50 kHz, 16-bit. Mitsubishi introduced the X-80 2-track machine at a sample rate of 50.4 kHz, 16-bit.

Common sample rates of the era were 44.056, 44.1, 48, 50, and 50.4 kHz, and bit depths were 14-bit or 16-bit, pre-emphasis was usually turned on, and DC ran rampant in digital recordings. Today, when dealing with these tapes, we have to be aware of



Sony PCM-3324A

Mitsubishi also introduced a 32-track machine at 48 kHz, 16-bit. Soon after that, the industry decided to standardize the professional sample rate at 48 kHz, with the consumer standard set at 44.1 kHz to match the CD sample rate. Until 1989 there was no such thing as a sample rate converter, so sample rates had to be the same in order to transfer audio from one format to another digitally.

Remember that it's possible to play back a 44.056 kHz tape at 44.1 kHz, it will just be a little sharp and fast. You can play back a 50 kHz tape at 48 kHz, it will just sound flat and slow. That is, if you have a reference. It is possible that a song was sped up or slowed down during the original production, but it's doubtful that all of the songs of an album were speed-changed by exactly the same amount. Play back the source at another sample rate and compare it with a live piano or other instrument to see which sample rate is most plausible as the intended original sample rate. On many of these early projects the sample rate wasn't written on the box, because there was no other choice and other sample rates had not been invented yet. You never saw an analog tape labeled "Non Dolby" before Dolby noise reduction was invented.

The same thing is true regarding bit depth. All consumer digital tapes were 14-bit except Sony. Nobody ever labeled a tape 14-bit. I suggest using a meter that shows actual bit activity to properly determine the bit depth of a digital signal.

Sony PCM-F1 machines used a Betamax deck to record the encoded video. Other processors used VHS transports. All Betamax decks have a switch that disables the video dropout compensator. (The PCM-F1 does its own error correction.) Only professional VHS machines have this switch. If you have a PCM-F1 tape that was recorded on VHS, access to a professional machine may make the difference whether or not you can recover the audio encoded on that tape.

To Be Continued

Next month I'll talk about emphasis and DC content in old digital tapes, and how you can deal with them in modern DAWs. EQ

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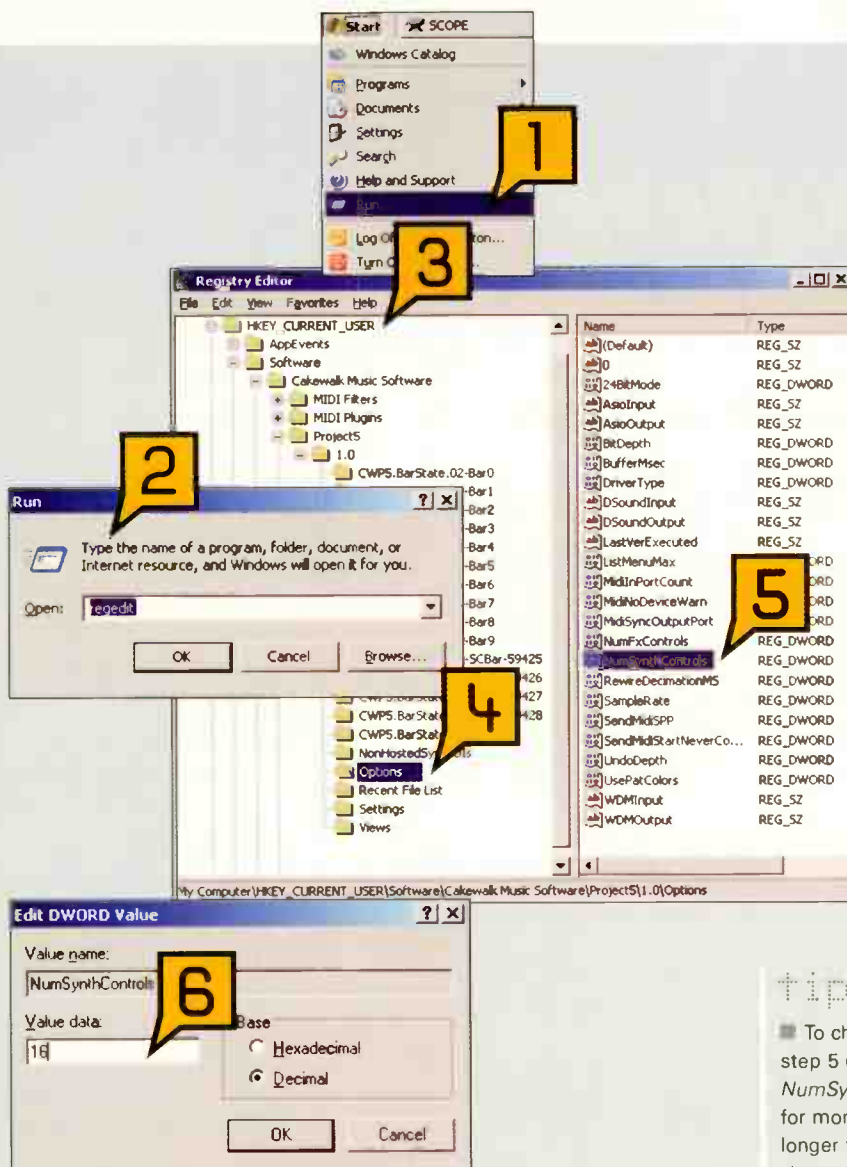
Cakewalk Project 5

More SYN.OPS Widgets!

Objective: Change the number of SYN.OPS widgets to see more synth parameters at one time, thus making them available for manipulation or remote control.

Background: The SYN.OPS section of Project 5 contains a synthesizer control module. This defaults to containing eight knobs ("widgets"), assignable to any synthesizer parameter, that can also be assigned to remote physical controls. However, you can increase the number of controls for compatibility with, for example, fader boxes with 16 faders, EQ, and limiting.

Step by Step: These six steps show how to edit the Windows registry to change the number of widgets. Caution: This is a relatively simple operation, but back up your registry before proceeding and know how to restore it in case something goes wrong.



- 1 Click on Start, then click on Run.
- 2 Type regedit and click on OK.
- 3 In the Registry Editor, expand the "tree" on the left-hand pane and locate the folder HKEY_CURRENT_USER. Click on its + sign to show the subfolders.
- 4 Follow this path to find the key to edit: HKEY_CURRENT_USER > Software > Cakewalk Music Software > Project5 > 1.0, then click on Options.
- 5 A list of files opens up in the right pane. Double-click on NumSynthControls.
- 6 Enter the number of widgets you want (make sure you specify whether the number is Hexadecimal or Decimal), then click on OK.
- 7 The next time you open up Project 5, you'll see 16 SYN.OPS synth widgets.

tip

To change the number of processor widgets, in step 5 double-click on NumFxControls instead of NumSynthControls. However, there isn't really room for more than four. Note that Project 5 will take longer to open up than usual just after you've changed the registry. Don't panic!

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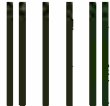
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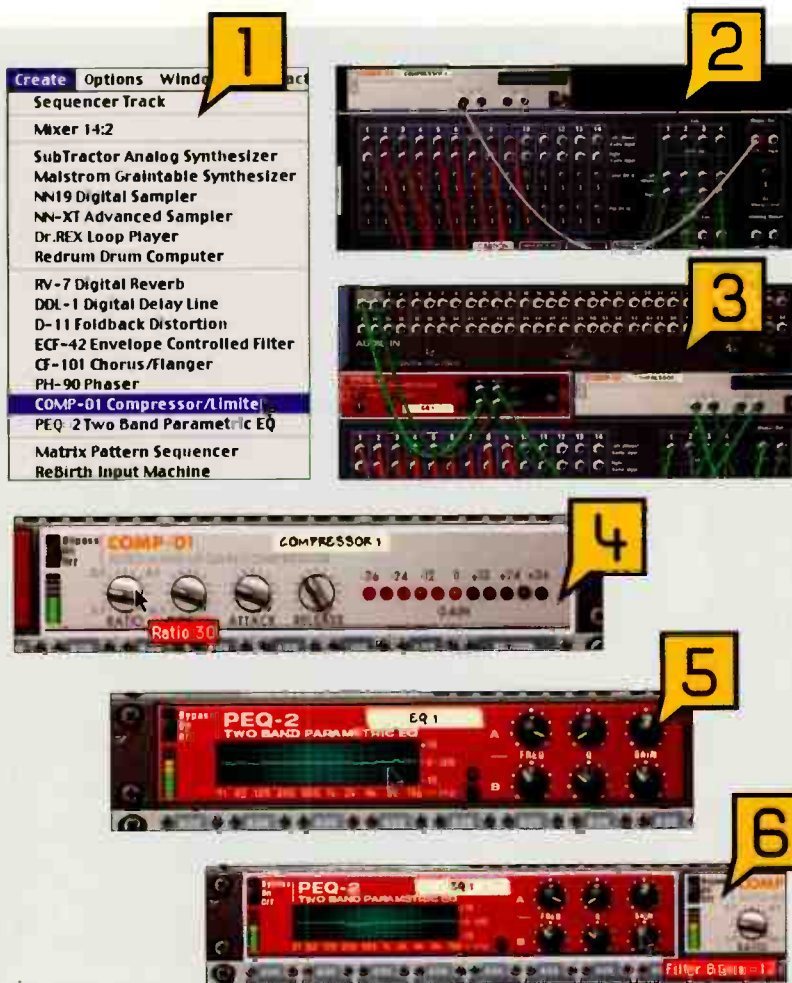
Propellerhead Reason

Creating Cohesive & Balanced Mixes

Objective: Improve final mixes using Reason's stereo compressor and 2-band parametric EQ.

Background: A common mistake new Reason users make is to place the 14:2 mixer last in the signal chain before going out to the audio interface. This often results in mixes that don't have as much "polish" as those done with programs that have dedicated mastering tools such as multiband compression and limiting. By patching the output from the mixer to a compressor, and from there into a parametric EQ for overall tonal shaping, your Reason mixes will sound more finished.

Step by Step: Balanced, fuller mixes are just six steps away.



- 1 Open a song file you'd like to beef up. Click on the MIDI and audio interface device (topmost module), then add a compressor/limiter from the Create menu.
- 2 Flip the rack to the back (you can do this by pressing the Tab key). Patch the stereo mix outputs from the mixer to the compressor's left/right inputs.
- 3 Click on the audio interface device to highlight it, then create a PEQ-2 2-band parametric EQ. It should appear next to the compressor. Patch it into the EQ, then patch the EQ's outputs to the main left and right channels of your audio hardware, as shown.
- 4 Flip the rack back around and play your song. Work with the compressor first: I suggest setting the compressor ratio to around 2:1 and adjusting the threshold, attack, and release to taste. The idea is to even out the song, not create pumping effects from the compressor, so you might need to fiddle with the attack and release times to make the compression as transparent as possible — the idea is to get a more average level. By its nature, the compressor will "glue" things together.

- 5 Reason's compressor tends to roll off high frequencies. This is where the parametric EQ can help. Use the A band set with a wide Q to slightly boost the highs around 8 kHz.
- 6 The compressor can also make things a bit too muddy, so you might need to reduce some of the low-mids. Use the B band set to a wider Q at around 350–400 Hz. Then reduce the gain just a bit.

tips

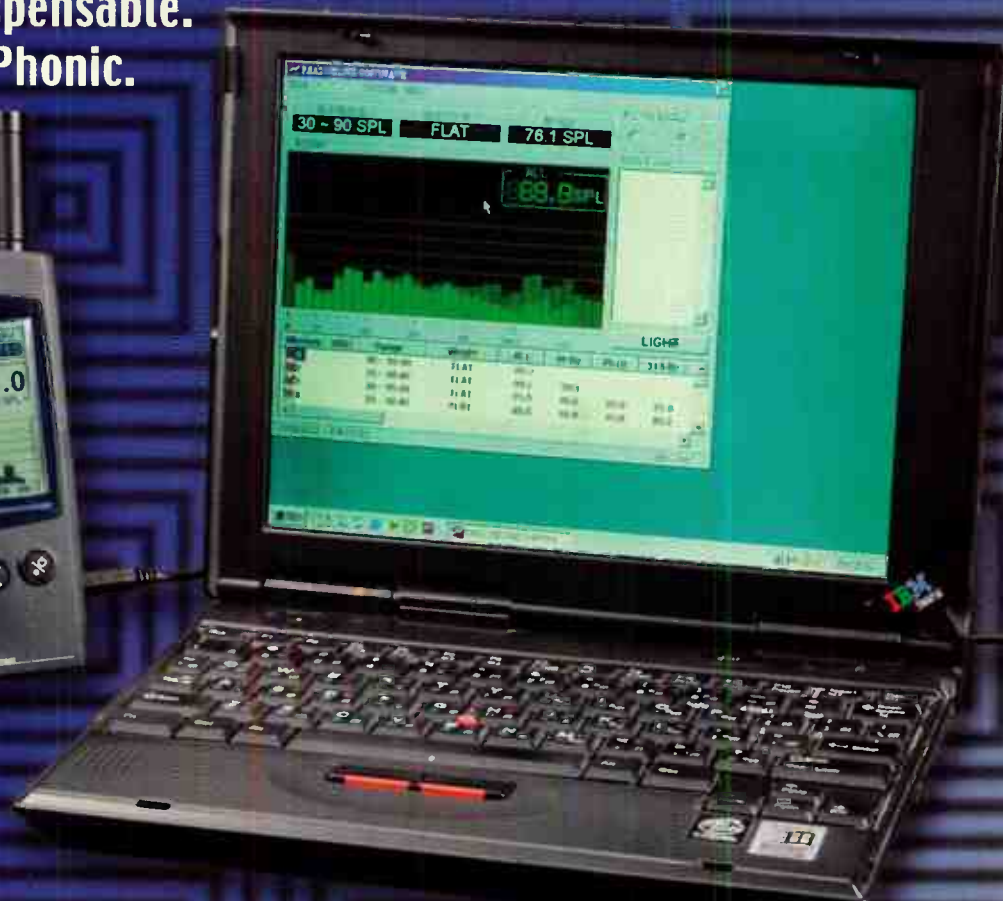
- If the compressor is being triggered too much from one particular frequency range, patch the EQ *before* the compressor, then use the EQ to even out the mix.
- Don't overdo the high EQ boost; it's easy to make the material too sizzly if you're not careful, so reference professionally mastered songs as you fine-tune the mix.
- Reason 2.5 users can split the mixer's output using the Spider Audio splitter so one stereo signal goes to the compressor/EQ while the unprocessed signal goes straight to another set of audio inputs (assuming your audio hardware supports multiple channels). Then patch the physical outputs from the interface into separate channels on your mixer. This will allow you to A/B the processed mix to the original without having to manually bypass the effects.

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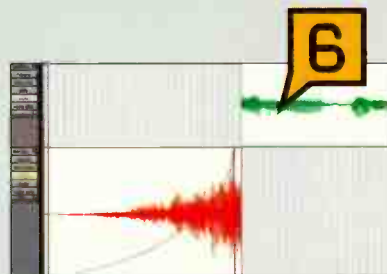
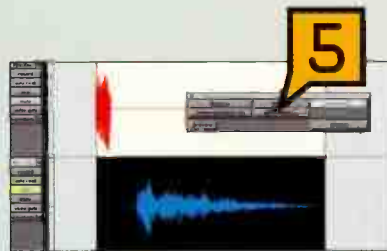
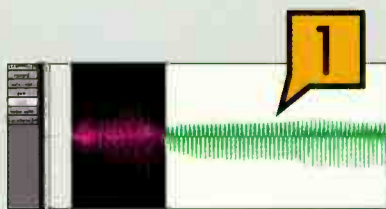


Reverse Vocal-Transition Trick

Objective: Create a sweeping ear-candy effect for segueing into a vocal.

Background: Sometimes the first note of a vocal can enter the mix like a sharp slap to the face. This can be a good thing . . . or not. Assuming the latter, this trick might be just the remedy your song needs.

Step by Step: You've heard this on hit songs, now you're seven steps away from adding it to your bags of tricks.



- 1 Isolate a word or syllable from the vocal track. The most obvious candidate is the first word of the song.
- 2 Paste it into an empty track.
- 3 Insert a reverb plug-in on that track, select a cavernous patch, and set the wet/dry balance to 100-percent wet. Solo the track, and adjust the reverb to taste.
- 4 Now record it! One method is to send the track's audio through an output bus to a receiving track whose input bus is set to the same channel. Or you could bounce the file to disk and reimport it as a new audio track. Whatever the case, allow plenty of record time for the reverb tail to fade out.
- 5 Select the newly recorded audio file, open the Reverse plug-in from the AudioSuite menu, and click Process.
- 6 Trim unnecessary audio from beginning and end of file. Align the reversed file so the peak of the swell butts up against the entrance of the first note of the original vocal. For a more dramatic and pronounced effect, you might want to draw a fade-in, as shown.
- 7 You can drive it home by putting a kick and crash on the downbeat. (Log onto eqmag.com to hear an example.) Some words or syllables work better than others, so experimentation is the key. Don't stop with just the first vocal note. This can also work well for verse/chorus or chorus/verse transitions, bridge segues, you name it. . . . Have fun.

tip

■ If you're looking for a treasure trove of pre-fab transition effects, check out *TranceFusion* from Ilio — a top-notch sample CD packed front-to-back with transitional sweeps, swoops, fills, and effects.

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Emagic Logic

Velocity-Switched Environment Instruments

Objective: Create a velocity-switched/triggered instrument in Logic's Environment.

Background: Logic offers a number of customization options, including the ability to design virtual MIDI devices that use conditions to split, scale, and otherwise process incoming data. One such application is to create an Environment instrument object that uses a different MIDI instrument or channel for each layer of a velocity-switched patch. For example, you could use this technique for combining *piano* and *forte* multisample layers from separate tone modules, samplers, or MIDI channels, where lower velocities trigger the *piano* layer, and higher velocities trigger the *forte* layer.

Step by Step: Customized instruments aren't difficult to make — here's one example.

- 1 Open the Environment window, then create a new instrument and a transformer object.
- 2 Patch the newly created instrument into the transformer object.
- 3 Double-click the transformer object to open its parameters; from the top drop-down menu choose Condition Splitter (true -> top cable), then set the status to Note, and the Velocity to greater than or equal to/less than equal to whatever velocity split point you want for switching between two different sounds.
- 4 Patch the top cable of the transformer object to the desired sound source (either the *piano* or *forte* layer, for example).
- 5 Next, patch the lower cable of the transformer object to the next sound source.
- 6 Click on the instrument you created, then name it something like "V Switch" from the parameter box (left-hand side of the Environment window).
- 7 From the Arrange window, select a track then select the velocity-switched instrument from the MIDI Instrument sub-menu. Now play your MIDI controller. You should hear the sound change from one sound source to the next with higher/lower velocities.

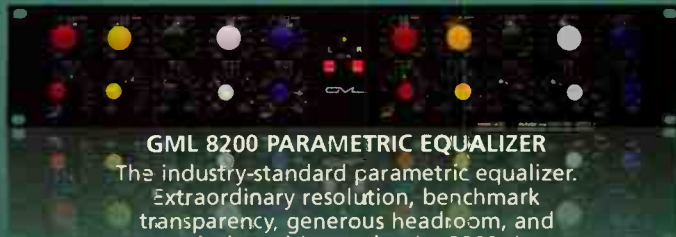
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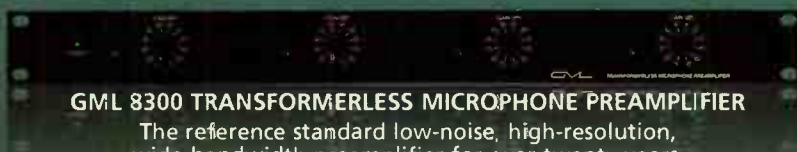
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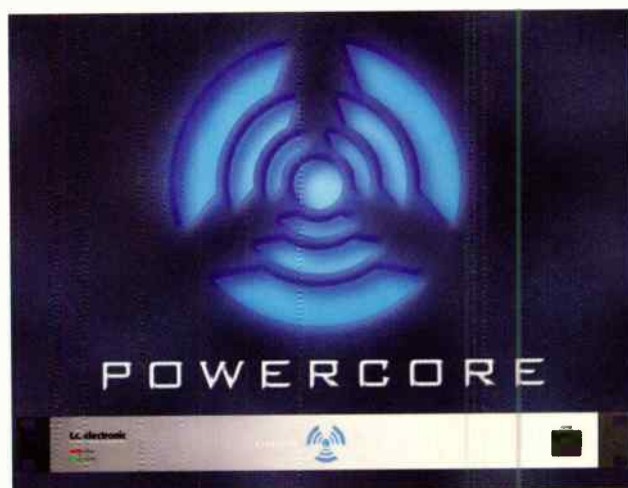
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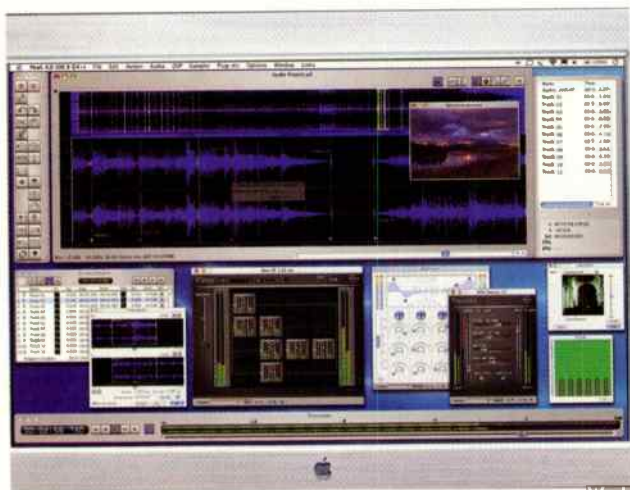
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With groundbreaking innovation in electro/acoustic transducers, no-compromise design, superior materials and the same A.R.T. (Accelerated Ribbon Technology) folded ribbon tweeter found in all ADAM monitors, ADAM's P11A two-way shielded active monitors deliver your mix with astonishing clarity. Connect a pair to the main outs of your MOTU 828mkII FireWire audio interface — or any MOTU I/O — to hear your mixes with unique imaging and outstanding transient response at a very attractive price point. Europe's "Keyboards" magazine held a studio monitor shootout between no less than 25 professional monitor systems, and the ADAM P11A's came out at the top of the heap. One listen, and you'll be hooked, too!



Upgrade your

MOTU Studio

To Mac OS X

DP4, MachFive and the new 828mkII lead an impressive array of new studio tools for Mac OS X



The new 17-inch PowerBook G4

17 inches of pure professional audio computing pleasure

With a display resolution of 1440-by-900 pixels, the new 17-inch PowerBook G4 delivers an eye-popping 1.3 million pixels on screen — the same viewing area as a 19-inch CRT monitor. You see more tracks, more mixer faders, more plug-ins, more virtual instruments, more everything in your Digital Performer virtual studio. At 15.4 inches wide, it sits perfectly on top of your MOTU 828mkII FireWire audio interface. The 1-GHz G4 processor delivers serious CPU horsepower — enough to run as many instances of MachFive and other virtual instrument plug-ins as you need, with plenty left over for your favorite plug-ins. Back up your projects to DVD-R with the built-in SuperDrive. The MOTU studio is now more powerful and portable than ever.

Remove the 828mkII's rack ears and slide it right underneath your TiBook — the perfect desktop system!

Waves Native Platinum

The ultimate Waves processing bundle for every MOTU studio

No studio is complete without Waves processing, and now Waves brings its entire line of award-winning plug-ins to the Digital Performer Mac OS X desktop. From the classic L1 UltraMaximizer to the exquisite Renaissance Series to the Masters and Restoration bundles — all of the Waves processing you've come to depend on every day can now be at your fingertips in the most advanced native audio recording system available. When only the very best signal processing will do, Waves plug-ins deliver.



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Authorized Reseller



Room with a VU

by Mitch Gallagher

STUDIO: Toys In The Attic

LOCATION: Lexington, KY

KEY CREW: Dwight (owner/operator), Elijah, Rebekah, and Michelle Dunlap (chef/CD dupes), Jeff Kersey (Pro Tools advisor)

CONSOLE: Digidesign Pro Control with Fader Pack, Argosy console, Midas Venice for remote

RECORDERS: Alesis HD24 [2], Masterlink; TASCAM DA45, CDRW402, 112 mkII, Microboards CD duplicator

MONITORS: Genelec 1032A, 1031A; Yamaha NS10M, EAW/Crest/Ashley monitor rig for rehearsal/live recording

MICROPHONES: Neumann U87 [2], M147 [2], KM184 [2]; AKG C451EB [2], C460, D12E; Shure SM7, SM57 [2], KSM44SL [3], KSM141 [2], Beta52, Beta91; Audio-Technica AT4060, AT4054 [2], Sennheiser MD409, BLUE Dragonfly

OUTBOARD: Avalon 737SP [2], Empirical Labs Distressor [2], SPL Transient Designer 4, TC Electronic Finalizer 96K

MIC PREAMP: Focusrite ISA110 [2], TRUE Precision 8 [2], Avalon U5 DI, Countryman DI [4]

EFFECTS: TC Electronic M5000 dual engine with ATAC, D2; Eventide Eclipse, H3000SE

COMPUTER: Apple G4/733, 1 GB/RAM, Digidesign 73 GB Digi drive [4], Exabyte VXA-1, Lacie DVD-R, NEC 17" LCD monitor [2]

DAW: Digidesign Pro Tools Mix³, ADAT/24 Bridge, 888/24 [2], USD; Aardvark Aardsync II, Sync DA; many plug-ins

KEYBOARDS/MIDI: Yamaha S80, MOTU MIDI Timepiece AV
INSTRUMENTS/AMPLIFIERS: Vox AC15, AD120; Eden Metro Bass combo, DW "Timeless Timber" drumkit, 25 snares, Roland Handsonic, gobs of cymbals

STUDIO NOTES: We created "Toys In The Attic" after

purchasing our home in 1993. The original attic had pull-down steps, no walls, and no floor — just joists. We decided to keep the room open with a couple of iso spaces. All of the walls, flooring, and insulation were doubled. Our "little place to lay down some ideas" festered from there.

Since then, the studio has been upgraded three times. We started with black-face ADATs, and a 32x8 Mackie. Next were dual Yamaha 02Rs, 20-bit ADATs, and Creamware, now the Pro Tools Mix rig. I guess Pro Tools HD is next. . . .

The isolation and feel of the room is enjoyable, and the skylight makes the room unique.

EQUIPMENT NOTES: Since I do almost all the work in the studio, the setup stays very similar. I use the TRUE preamps for basic tracking, with drumkit tracked through the Transient Designer as well; overheads are routed through the Distressors. Bass is tracked direct through the Avalon U5 or through the Eden amp. For vocals, I use the Avalon 737sp's. I've found the BLUE Dragonfly to be a really great mic for electric guitar, usually through the TRUE preamp.

The M5000, Eclipse, and D2 stay patched digitally for mixing. The Genelec 1032As are real favorites of mine. When we first built the studio, I had 1031s, but the neighbors had trouble hearing my mixes, so I upgraded to the 1032s.

Pro Tools has been the biggest blast to me since my kids. The only drawback to the studio would be that it's in our home. But then again, our clients are usually willing to tuck the kids in bed if necessary.

Toys In The Attic isn't meant to be everything to everyone, but it has been an amazing blessing to us.

HEY, EQ READERS. WANT US TO FEATURE YOUR STUDIO? SEND PICS AND INFO TO mgallagher@musicplayer.com.



SURROUND

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World Radio History

Introducing the 828mkII

24-bit 96kHz resolution. DSP-driven mixing and monitoring.
Front-panel programming. Stand-alone operation.



828mkII feature highlights

- **CueMix DSP™** — the 828mkII delivers DSP-driven digital mixing and monitoring for all 20 inputs. Connect mics, guitars, synths and effects processors, and monitor everything from the 828mkII's main outs, headphone out or any other outputs with no separate mixer needed.
- **Front-panel control** — access your entire mix, or any 828mkII setting, directly from the front panel.
- **Stand-alone operation** — program your mixes at the studio and then bring the 828mkII to your gig — no computer needed. Need to tweak the mix? Do it on site using the back-lit LCD and front-panel controls.
- **Multiple CueMix DSP mixes** — create different monitor mixes for the main outs and headphones. Add send/return loops for outboard gear — with no latency.
- **Front-panel mic inputs** — connect a pair of mics or any TRS input with front-panel convenience.
- **Mic/guitar/instrument sends** — insert your favorite outboard EQ, compressor, amp or effects processor to the two mic/guitar inputs, before the signal goes digital.
- **20 inputs / 22 outputs** — there's no channel sharing in the 828mkII; the mic inputs, SPDIF I/O, headphone out and main outs are all handled as separate channels.
- **Support for 96kHz ADAT optical digital I/O (S/MUX)** — provides 4 channels at 88.2 or 96 kHz.
- **Sample-accurate MIDI** — connect a MIDI controller and/or sound module with no separate interface needed. MIDI I/O is sample-accurate with supporting software.

Basic features

- **Expandable 24-bit 96kHz audio interface** for Macintosh and Windows with 20 channels of input and 22 channels of output (simultaneously).
- **24-bit S/PDIF digital input/output** up to 96 kHz.
- **Sync** — word clock in and out; built-in SMPTE (LTC) in and out; sample-accurate ADAT sync input.
- **Compatible** with virtually all audio software on Mac OS 9, Mac OS X and Windows Me/2K/XP.
- **Includes AudioDesk®** sample-accurate workstation software for Mac OS with 24-bit recording/editing and 32-bit automated mixing/processing/mastering.
- **2 mic/guitar inputs** with phantom power and sends.
- **8 TRS analog inputs** with switchable input levels.
- **8 TRS +4dB analog outputs** — perfect for surround.
- **Separate TRS main outs** and front-panel headphone jack, each with independent volume control.
- **8 channels of 24-bit ADAT optical input/output** with sample-accurate ADAT SYNC.
- **MIDI I/O** — no separate MIDI interface needed.



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