

V-SYNTH, MOOG MODULAR V, SAMPLETIDE 7, PRO TOOLS 6.1, AND 4 MORE REVIEWS

Electronic Musician®

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January 2004

2004
EDITORS
CHOICE

THE 27 BEST NEW PRODUCTS OF THE YEAR

EFFECTS, DAWs, MICS, SEQUENCERS, SYNTHS, AND MUCH MORE

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MULTIBAND COMPRESSION

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STRATEGIES,
TACTICS, AND GEAR

A PRIMEDIA Publication

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MS2000B

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Photos shown with optional AIB-B analog input board.

D16XD

How I spent \$1.2 million...

CONFIDENCE AND CASH

The financial and emotional investment in the NT2000 has been high.

The NT2000 is not just the result of a steady model progression. The NT2000 represents a quantum leap in studio microphone design. That required courage, innovation, and a lot of money!

This is not just another mic, its a WORLD FIRST!

PIONEERING SPIRIT

While RØDE can rightly claim to be pioneers in the modern microphone category, the NT2000 is destined to change how the industry views all studio microphones, regardless of category.

STARTING WITH THE HEART

The heart of the NT2000 is the Australian designed and manufactured HF1 capsule. Named in honor of my late father, Australian audio engineering legend, Henry Freedman.

These 1" transducers are hand assembled in the fashion of a fine Swiss watch using the best components money can buy.

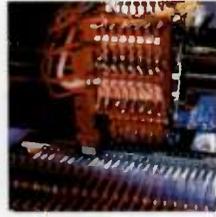
Machined by computer accurate lathes and mills to tolerances approaching the limits of modern technology.

Once processed the acoustic back plates are polished flat to within one thousandths of a millimeter then cleaned in custom made ultrasonic baths.

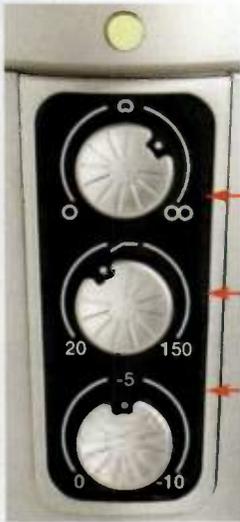
Diaphragms are 24K gold sputtered on 5 µm Mylar, and then hand tensioned and aged before being assembled and tested within our sub micron clean rooms.

Consistency from microphone to microphone is assured due to rigorous testing and our proprietary multi stage Quality assurance program.





WORLD'S FIRST!



TOTALLY VARIABLE POLAR PATTERN

TOTALLY VARIABLE FILTER

TOTALLY VARIABLE PAD

THE SOUND OF LEGENDS

The frequency and transient response of this new transducer has been voiced to complement today's modern recording techniques, and yet still evoke the silky smooth character of the legendary microphones of the 50's and 60's. Everything we have learned over the years, every comment from industry leaders, has been taken into consideration when selecting the tonal character of this microphone.

TRANSPARENT ELECTRONICS

A superb transducer must be complemented by the best electronics. To ensure transparency and the highest fidelity, my brief to our engineers was, "I demand nothing!" RØDE's electronics designers set about designing a circuit that coupled the HF1 capsule in such a way as to add nothing. To pass the output of the capsule without coloration or distortion. I believe we have achieved that aim.

A WORLD FIRST IN TOTAL CONTROL

The NT2000 is the world first superlative class 48 V FET microphone to have totally variable polar response, totally variable pad and totally variable filter all incorporated within the body of the microphone.

DEMAND RESULTS

All this information is meaningless unless it delivers the promise. In the end its all about the sound, I am putting my reputation on the line here.

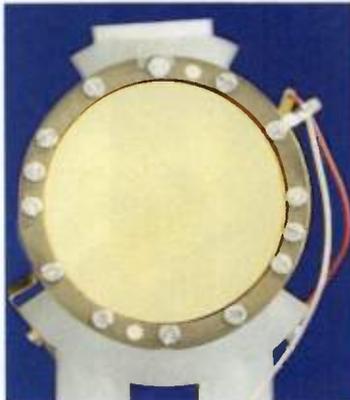
I am saying without fear of contradiction, the NT2000 is the best sounding and most versatile 1" FET studio microphone on the world market today, regardless of cost.

We broke new ground in 1990 with the release of the NT2, the NT2000 will revolutionize the industry again.

Peter Freedman
President
RØDE MICROPHONES
Sydney Australia

THE HF1, HEART OF THE 2000

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MICROPHONES

FEATURES

25 LET'S SPLIT

Split-band compressors can improve your mixes and solve an assortment of everyday audio problems. We explain how they work, discuss a range of applications, and investigate eight hardware and software compressors.

By Michael Cooper

38 COVER STORY: 2004 EDITORS' CHOICE AWARDS

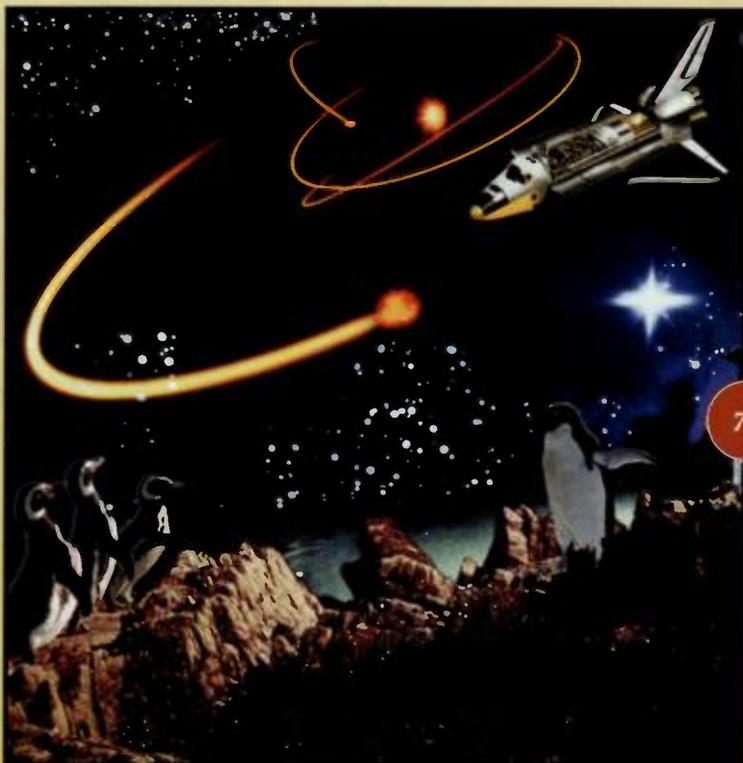
Pop the cork! It's time to celebrate the finest new products we've tested during the past year.

By the EM Staff

70 SOUNDS FROM ANOTHER PLANET

Thanks to Stanford University's Planet CCRMA project, the Linux operating system is rapidly becoming an OS of choice for many musicians. We offer tips for working in the Linux environment and survey the most promising Linux applications for music production.

By Allan Metts



Electronic Musician

2004 EDITORS CHOICE



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DEPARTMENTS

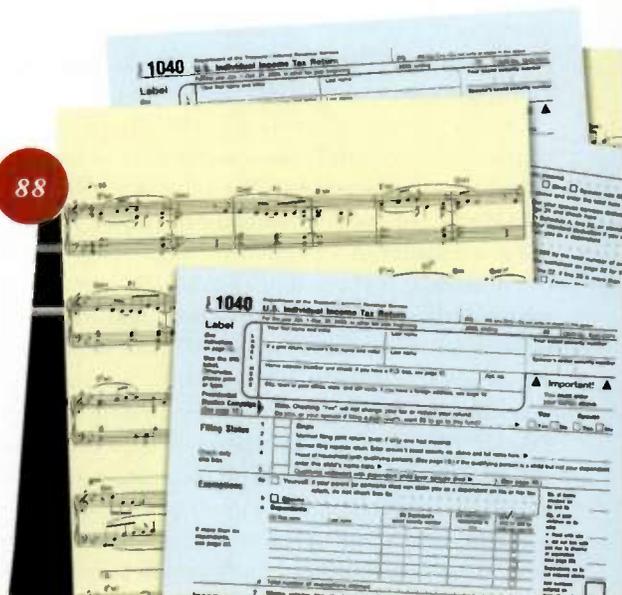
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Just what exactly makes an artist's work great?

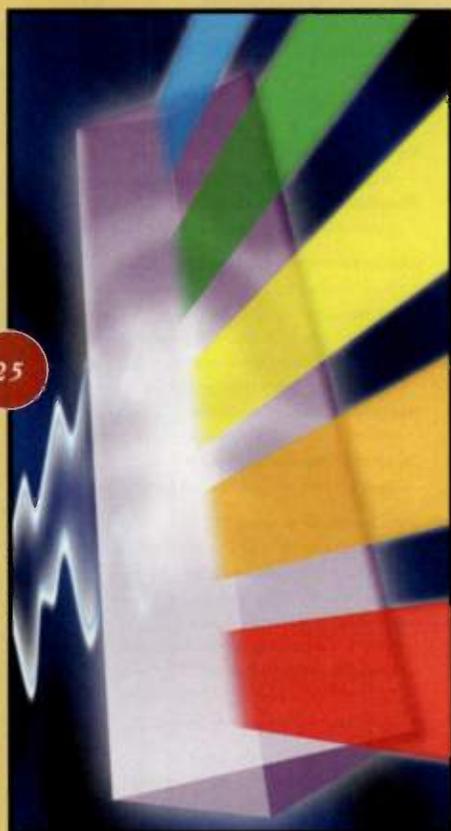
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digital audio workstation
- 120 QUICK PICKS:** FMR Audio RNP 8380 Really Nice Preamp mic preamp; Metasonix TM-3 Gas-Tube Dual VCO with Suboctave analog synth module; Kenton Spin Doctor MIDI control surface; Native Instruments Absynth 2 (Mac/Win) software synthesizer

25



Value at Any Cost

For each of the past 12 years, we have presented Editors' Choice Awards for approximately two dozen products (27 this year). We put a lot of time and thought into these awards, and we don't play favorites. The winners get this prestigious award the old-fashioned way: they earn it.

One of our considerations in choosing Editors' Choice winners—and also a major part of our review evaluations—is value. But value is a soft criterion. Some might call it “bang for the buck,” but it's not just a matter of how many features you get for a given price. If features don't work well, they aren't particularly valuable. If a product's features are difficult to access or its user interface is unintuitive, or, in the case of software, if it experiences constant crashes, you might not care to use the product at any price.

Some products are obviously overpriced, and are therefore unlikely to win an Editors' Choice award. So when you see a product that you consider to be pricey win an award even though its competition is less expensive, it's because we are looking for value, not just a lower price.

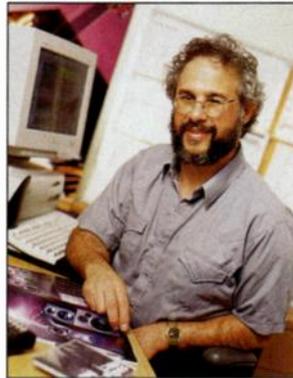
Furthermore, some products we see are costly because of the way they must be built. Analog products generally tend to be expensive, especially if they use discrete electronics rather than ICs. On the other hand, with some types of products (such as analog synths), discrete audio electronics generally sound better than IC-based circuits. Again we have a trade-off.

We try to consider all of these factors and to separate apples from oranges when discussing value. It isn't easy, and you might not always agree with our assessment. But our process for determining value—considering not just how many features you get but which features, how well they are implemented, how accessible the user interface is, and so on—is the same process that you should go through when making your buying decisions.



If you noticed the volume number on this issue's cover, table of contents, and masthead, you may have observed that this is volume 20, issue 1. Yet we aren't celebrating our 20th anniversary. Confused? That's understandable.

As longtime readers of *EM* will recall, the magazine evolved from a quarterly tabloid called *Polyphony*, which was first published in 1975. The magazine was redesigned and relaunched as *Electronic Musician* in 1985, but we published only June and September issues that year. That was volume 1. Following the magazine's sale to Mix Publications, we began monthly publication in January 1986 (volume 2, number 1), so most people consider that to be the magazine's birthday. As a result, we will celebrate our 20th birthday a year from now. But the fact is, *EM* has been around longer. In fact, if you include *Polyphony* (which, admittedly, is a big stretch), we've been around for 30 years!



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The fact of the matter is that all the major music technology retailers, including Sweetwater, get the same great deals and charge the same low prices, so other companies will gladly agree to match a price that is within pennies of their normal price anyway.

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MOTIF ES

We probably could have rested on our laurels and just done a minor repackaging of the incredibly successful Motif Music Production Synthesizers.

Instead we started from scratch developing the core of our newest synth from the ground up. The heart of the Motif ES is a brand new tone generator chip featuring 128 notes of polyphony, new filter algorithms and massive DSP power. To compliment all this sonic power, the ES has the largest and most musical wave ROM ever featured in a workstation keyboard. New features like Phrase Factory™ with over 1700 arpeggios, Mega Voice technology and Real Time Loop Remix makes it easier than ever to create great tracks. Its advanced Integrated Sampling Sequencer lets you add audio tracks into your songs. The latest in digital technologies including support for 512 MB of DIMM Sample RAM, USB storage hosting and 2nd generation mLAN computer connectivity guarantee future expandability. We added bigger and better knobs, sliders and transport controls, even a ribbon controller. In fact, ES might stand for Every Suggestion we ever heard for improving Motif.

And when we were done developing all this cool cutting edge technology there was nothing left to do, but give this brand new beast a name. Try as hard as we could, there was no better name for the most powerful synth workstation on the planet than Motif.



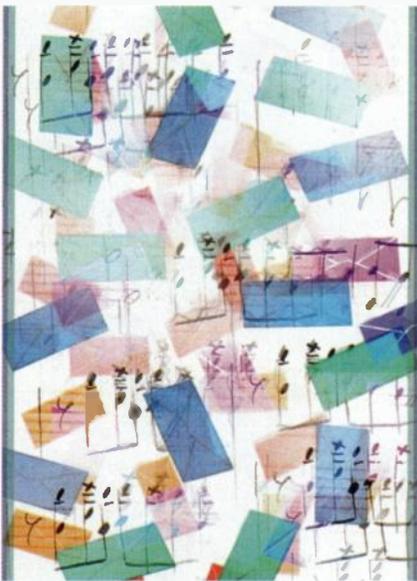
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- **Expansion Slots** — New affordable mLAN option and 3 PLG slots
- **Extended Support** — Supports Mackie and Logic control protocols for integrating with software DAWs

* when converted to 16-bit linear format

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DIMITRY PANICH

ALL EQ PLUG-INS BEING EQUAL

This is regarding your article “Plugging Into EQ” by Nick Peck (October 2003). I found the article informative, especially in its explanation of FIR, IIR, and FFT filtering algorithms. However, I felt that the article was diminished by its comparison of plug-ins that run on dedicated hardware cards and calculate in 48-bit fixed point (such as Pro Tools plug-ins) with plug-ins that run on a CPU and calculate in 32-bit floating point. One exception was Anwida Soft’s GEQ31V, which runs on 64-bit floating point.

The disparity between 48-bit fixed point and 32-bit floating point is greater than 16 calculation bits (see “Computer, Do the Math!” by Oliver Masciarotte in the February 2003 issue of *Mix* magazine). The real comparison should be made between 48-bit fixed-point plug-ins and 64-bit floating-point plug-ins.

I believe that Anwida’s GEQ31V was a poor choice for this article because it’s a graphic equalizer and not parametric. It would be more fair to line up the 48-bit fixed-point plug-ins from Bomb Factory, Focusrite, and Sony against 64-bit floating-point native plug-ins such as Sonic Timeworks’

parametric equalizer (which comes in two flavors), DSound’s Simple Audio Plug-in Pack parametric equalizer, iZotope’s Ozone 2 parametric equalizer, Wave Arts’ TrackPlug parametric equalizer, Voxengo’s CurveEQ VST, and Sonalksis’s SV-517 Stereo EQ.

I understand that you were looking to compare cross-platform products and this imposed the 48-bit fixed/32-bit float issue from the onset. But I feel it would have been in the better interest of your readers to go to the bottom line: sound-price performance. I think more information on CPU DSP as opposed to proprietary-card DSP serves the greater *EM* community. Though I would say that both *EM* and *Mix* are commendably informative for all things audio, I feel that *Mix* is more geared towards the established Pro Tools/Apple community and its more expensive counterparts while *EM* is more appealing to the, shall I say, independent entrepreneur community.

I think your readers would want to know whether in fact less expensive 64-bit floating-point DSP competes with more expensive 48-bit fixed-point DSP. Pro Tools has a clear advantage for now, but computers will always get more powerful. I predict that the next step for proprietary DSP will be to standardize at least 56-bit fixed point to stay competitive as 64-bit DSP becomes more common.

For a future article, I think it would be good if you compare 48-bit fixed and 64-bit floating formats head to head, potentially shedding light on a more cutting-edge issue.

Merrick Fleisher
Bellsong Recording Studio
Brooklyn, New York

PC POWER

I wish that *EM* would test Windows products on machines equipped with Pentium III or higher processors. Readers learn little when such products are tested on Celeron chips, which are not really suitable for serious audio work.

Of course the Digidesign Digi 002 [covered in *EM*’s November 2003 cover story, “All Fired Up”] will not run well on a Celeron chip, but I want to know if it is right for my Pentium 4. The manufacturer’s Web site states that the product needs at least Pentium 4 or Xeon CPUs running at 2.0 GHz. They probably know what they’re talking about.

And in the case of your Native Instruments Vokator review (November 2003), your own sidebar (“Minimum System Requirements,” p. 96) clearly states that the manufacturer specifies Pentium III or higher.

So testing on a Celeron processor is not useful.

Mitch Greenhill
 via e-mail

Mitch—The Vokator review and the Digi 002 feature coverage turned out to have two different problems. In the Vokator review, our error was in leaving out the complete system requirements. In fact, according to Native Instruments, a Celeron/800 MHz or better is adequate to run Vokator, although the program probably would run better given the Level 2 cache incorporated into the Pentium. So reviewer Brian Smithers’s test system met the manufacturer’s specifications.

The Digi 002 story is more problematic. Indeed, Digidesign does not recommend the Celeron for use with the 002, but the Digidesign staff could not explain the reasons to our author. We find it hard to

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understand how the use of a Celeron instead of a Pentium could affect the operation of the 002 hardware. (Obviously, we understand how it can affect the Pro Tools LE software bundled with the 002.) No other FireWire interfaces we covered had problems with the Celeron. Nevertheless, you are right, the manufacturer specified a higher-end CPU, and we should have caught this problem. We completed our tests on a Macintosh system that met Digidesign's specs, so our overall conclusions about 002's performance are valid.

We apologize for the errors and certainly feel we have learned a lesson. Thanks for pointing it out.—Steve O

STACKS OF SOFT SYNTHS

Hi, and thanks for the great magazine. Many subscriptions have come and gone but yours will continue coming to my mailbox due to the great info that you provide.

I am writing in response to a letter ("Letters: More Firepower, Please," November 2003) regarding Cakewalk

Sonar's inability to echo a single MIDI input to more than one channel (that is, for layering sounds from soft synths). I recently upgraded to Sonar 3 and have happily discovered that this is now possible.

This newest version is perfect for layering various soft synths, including those using the VST standard. It also allows for the rewiring of native soft synths (like Cakewalk's Project5 and Propellerhead's Reason) for additional layering within Sonar 3 if desired.

The resulting sound is nothing short of spectacular. I have been comparing sounds from the included soft synths (such as Speedsoft's Vsampler) to those of my Korg Triton ProX and can only say that the soft synths are at least as good as if not better than the Korg.

I had problems with previous versions of Sonar and Pro Audio and was a bit skeptical about upgrading. However, Sonar 3 is outstanding, and when coupled with a powerful PC, can totally replace standalone hardware-based synths and samplers. The latency I can achieve with my MOTU 828mkII audio interface is 2.2 ms with five layers of synths using 30 to 48 percent of the CPU.

Mark Krebs
via e-mail

EM ARCHIVES REVISITED

As an avid EM reader I have several large boxes of back issues. Even though I usually read them pretty thoroughly when I receive them, there are good reasons to reread the older ones (especially when current issues bring up topics that are covered in back issues). Thus my several large boxes.

I second the suggestion of Dave Quick ("Letters: EM Archives," October 2003)—an EM archive on CD! That's something I'd pay good money for—that is, assuming I won't have to pay at a rate of \$10 per back issue!

Jim Bates
via e-mail

I read that you would like to know whether your readers are interested in having back issues of EM

archived on a CD and sold to us. Of course! As long as the price is not ridiculous, I could definitely see purchasing your archives, especially if you did it in volumes, for use in my personal studio—even if I had to scrape some extra pennies together. I've come to trust you guys, anyway, so I'm not worried.

Remember one thing: it needs to be searchable. Two o'clock in the morning is not the time for reading through an index!

C. Ross
Brooklyn, New York

G'DAY FROM OZ

To the crew at EM: I scoured the Internet for a magazine that gives practical, understandable advice for aspiring recording engineers—now, I have found it! Top work.

I get a lot out of reading the articles that you print, but at times I get lost in the technical details. Perhaps more articles like the one titled "Loud, Louder, Loudest" ["Square One," August 2003] would be great. This article was super-informative and very readable, but still respectful of the audience.

Matt F.
Melbourne, Australia

ERROR LOG

November 2003, "All Fired Up," p. 46. The table "Audio Interface Features" states that the only available driver support for the Digidesign Digi 002 is DAE. Shortly after the November 2003 issue went to print, Digidesign announced the release of Pro Tools LE 6.1.1, which adds support for standalone ASIO, CoreAudio, and WAV drivers, allowing Digidesign hardware to be used with third-party software products.

WE WELCOME YOUR FEEDBACK.

Address correspondence and e-mail to "Letters," Electronic Musician, 6400 Hollis Street, Suite 12, Emeryville, CA, 94608, or emeditorial@primediabusiness.com. Published letters may be edited for space and clarity.





TransX
Transform Transients,
Get Rhythmic Control



SoundShifter
Transform Time and Pitch



Morphoder
Transform
Sonic Identity



Doubler
Transform Dimension

Waves NEW Transform bundle is for anyone looking to push the envelope in sound transformation. Take creative control—shape time, pitch, instrument sound, presence, rhythmic contour, dimension and punch. Four processors using pioneering technologies allow you to easily and intuitively sculpt your sound with clarity and precision.

TRANSFORM YOUR SOUND

→TransX →SoundShifter →Morphoder →Doubler

FEATURING:

SoundShifter shift the pitch or shift the time or both

3 TOOLS: Parametric, Graphic, Realtime; 4 ALGORITHM MODES: Sync, Smooth, Transient and Punchy; MULTIPLE CONTROL/DISPLAY OPTIONS: Time, Tempo, Bars, Samples, SMPTE, Pitch, Interval, Frequency; FLEXIBLE LINK MODES: Unlinked, Time, Pitch, Strapped

Doubler a dedicated and specialized tool for this popular effect
2 or 4 voices with independent control of Detune, Pan, Delay, EQ and Volume, wide modulation options.

Morphoder for Vocoding and beyond

8 voice stereo synth, on screen keyboard control, format correction, Q optimized bands, Noise generator with filter for articulation control.

TransX specialized for shaping transients

Control room sound, adjust mic distance, control the pick and stick on guitars and drums, ad punch or soften attacks, highlight sustain, subtle and extreme.



- TransX—Transform Transients, Get Rhythmic Control
- SoundShifter—Transform Time and Pitch
- Morphoder—Transform Sonic Identity
- Doubler—Transform Dimension



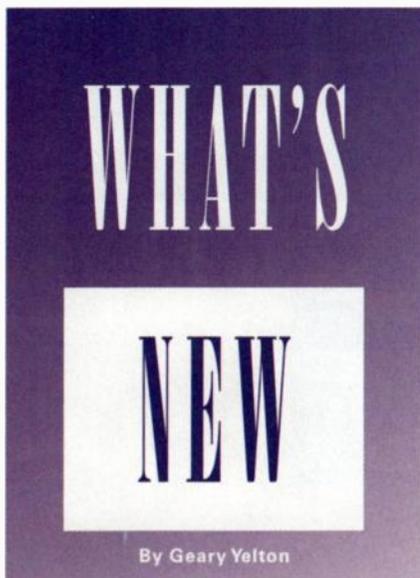
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▼ RØDE NT2000

The newest condenser from Røde is the NT2000 (\$899), which features a top-of-the-line HF1 capsule with a 1-inch dual diaphragm. The NT2000 is the first mic ever to offer three continuously variable controls for pad, highpass filter, and polar pattern. Especially well-suited for recording, the NT2000 is a phantom-powered FET mic designed to be versatile and avoid coloration and distortion. Its diaphragms are 24K gold sputtered on mylar and then hand-tensioned and aged before the mic's final assembly and testing.

You choose the NT2000's pickup pattern (omnidirectional, cardioid, or bidirectional) with the turn of a small knob located on the casing. Similar knobs let you vary the pad from 0 to -10 dB and the highpass filter from 20 to 150 Hz. The mic has an output impedance of 200Ω and a maximum output of +15 dBu at 1 percent THD into 1 kΩ. The signal-to-noise ratio is 84 dB and the dynamic range is 136 dB. Maximum SPL is 147 dBA before the pad, and self-noise is 7 dBA.

The NT2000 comes with a shockmount and a hard-shell carrying case. Røde Microphones; tel. (310) 328-7456; Web www.rodemic.com.



▼ LEXICON OMEGA

Lexicon now offers an all-in-one, computer-based multitrack recording system. The integrated Omega Desktop Recording Studio (Win, \$349.99) system includes USB audio and MIDI I/O; audio-sequencing software; Lexicon's reverb plug-in, Pantheon; a scaled-down version of Applied Acoustics Tassman; and a suite of effects plug-ins.

The Omega I/O hardware is based on a mixer paradigm and features 24-bit A/D/A converters. The unit has eight inputs that you can assign in pairs to four simultaneous record channels. The two XLR inputs have dbx mic preamps, phantom power, and TRS insert points. Four TRS inputs handle balanced or unbalanced signals as hot as +22 dBu, and a high-impedance instrument input is mounted on the front panel. Stereo S/PDIF and MIDI I/O are also provided. An assignable stereo meter monitors signal levels.

ProTracks Plus, developed in collaboration with Cakewalk, features 32 stereo



audio tracks with unlimited takes per track and as many MIDI tracks as your CPU can handle. ProTracks Plus supports nonlinear editing, full automation, custom screen layouts, and 32 simultaneous DirectX plug-ins. The Pantheon plug-in supplies 35 presets and 6 reverb types, each with 16 editable parameters. Lexicon Pro (Harman); tel. (781) 280-0300; e-mail info@lexicon.com; Web www.lexicon.com.

▼ NATIVE INSTRUMENTS INTAKT

Next up in the loop-sampler wars is Intakt (Mac/Win, \$199), from Native Instruments. Intakt combines three sample-playback engines: Beat Machine, Time Machine, and standard sampling. Beat Machine uses a peak-detection algorithm to divide imported audio files into individual slices. For each slice, you can specify parameters such as playback direction, pitch, pan, and effects. Loops can be synchronized to MIDI tempo. Beat Machine can also export a Standard MIDI File so you can manipulate groove, accent, and feel in a host sequencer.

The Time Machine algorithm stretches

and compresses a sound's duration in real time without affecting its pitch. Sampler mode allows extreme pitch shifting while maintaining sound quality, according to Native Instruments. Intakt's modulation section provides an AHDSR envelope generator; two syncable LFOs with multiple waveforms; six types of filtering; and lo-fi, distortion, and tempo-synced delay effects. An additional Master Filter offers low-, high-, and bandpass modes or 3-band EQ. Intakt plays as many as 128 stereo voices with sample rates up to 96 kHz.

Intakt comes with a 1.2 GB loop library, by soundware developers Zero-G and East-West, and it supports a huge variety of sampler-instrument and audio-interface formats. Minimum system requirements on the PC are a Pentium III or Athlon/400 MHz, 256 MB of RAM, and Windows ME or XP. On the Mac, it needs a G3/500 MHz, 256 MB of RAM, and Mac OS X 10.2.6. Native Instruments USA; tel. (866) 556-6488; e-mail info@native-instruments.com; Web www.native-instruments.com.

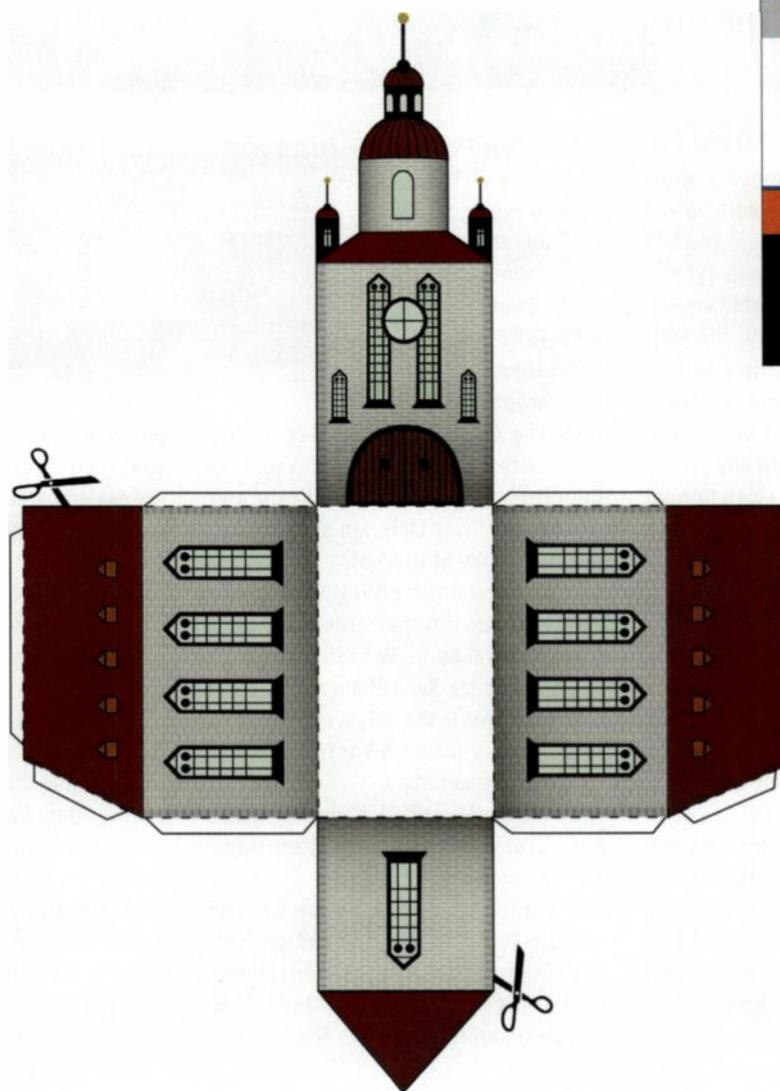


emagic

space designer

Studio Tools

Emagic Convolution Reverb



Fold your own hall.

Space Designer is a new reverb plug-in from Emagic that generates reverbs with stunningly realistic quality. It's as if you are singing or playing in a real hall or room. This is made possible by a process called convolution – literally, folding acoustic space in realtime. Shipping with over 1,000 samples taken from real spaces and reverb units, you have direct access to high-class rooms and halls, as well as the most sought-after classic and modern electronic reverb sounds. Of course, you can sample your favorite rooms and build your own personal reverb collection. Space Designer offers a lot more possibilities than other convolution reverbs: each reverb sound can be edited graphically with great detail using innovative envelopes specifically designed for the task. A unique reverb generation process allows the creation of synthetic convolution reverbs, offering a beautifully smooth and spacious sound that blends musically in every arrangement – even at low effect levels. Fold your hands, close your eyes, and enjoy the outstanding quality of Space Designer.



DOWNLOAD OF THE MONTH ▲▲▲▲

▶ SWAR SYSTEMS



Swar Systems has developed a series of software products for learning and composing Indian classical and folk music based on the Raga (melody) and Tala (rhythm) systems. Available in various formats and combinations, the software has three basic elements: a sample library of 22 Indian instruments called *Volume North 1*, a collection of over 1,000 MIDI loops of authentically played phrases, and an extensive Flash tutorial with audio examples covering the history and structure of Hindustani music. By press time, Swar Systems will also have released *Volume North 2*, featuring additional North Indian instruments.

SwarShala 3.0 (Win, \$140) packages all three elements in a single standalone application. SwarShala has three panes. The Learn pane offers a self-contained version of the tutorial. The Practice pane sets up parameters for virtual musicians you can accompany. The Compose pane is a multitrack sequencer for arranging the included Standard MIDI Files (SMFs), for creating your own, and for playing them using the Swar collection of sampled instruments.

SwarPlug (Mac/Win, \$170) is a VSTi, developed in conjunction with LinPlug, containing the 22-instrument sound library. SwarTrax (\$195) is a CD-ROM of the SwarPlug instrument library in popular sampler formats, including Akai, SampleCell, SoundFont, and others by request. Both packages include the SMF sequence library and standalone Swar Librarian software for auditioning the MIDI files.

SwarTutorial (Mac/Win, \$50), which runs on your Internet browser, is the same tutorial as in SwarShala's Learn pane. (Because SwarShala runs just on Windows, this is the only way to run the tutorial on a Mac.) SwarTutorial is a standout presentation.

Operating SwarPlug is simple: it has knobs for Gain, Pan, and Pitch-Bend Range, and that's it. I had no problems using it in Steinberg Cubase SX and Emagic Logic 6 (after conversion with FXpansion VST to AudioUnit Adapter). I was also able to import the SoundFont sample libraries in Reason's NN-XT sam-



pler and use them with the Swar MIDI-sequence library in Reason. SwarPlug is the easier method, but either way works. The MP3 example SwarSong combines Swar library files for tabla, sitar, tanpura, pakhawaj, and bansuri (see **Web Clip 1**).

The SMFs cover a wide range of Raga-based parts for all the instruments. The Librarian makes it extremely easy to audition the MIDI files on the instruments for which they were created. The files are classified by instrument and then by compositional element, making it easy to mix and match parts and then import the SMFs into your sequencing software. You'll find audio examples and software demos at Swar's Web site. Swar Systems; e-mail sales@swarsystems.com; Web www.swarsystems.com.

— Len Sasso

▶ WAVES TRANSFORM BUNDLE

From the company whose plug-ins already process audio in almost every way imaginable comes the Waves Transform Bundle (Mac/Win; \$1,200 native, \$1,800 TDM). Its four new sound-design plug-ins support TDM, RTAS, AudioSuite,

VST, MAS, Audio Units, and DirectX formats.

SoundShifter manipulates pitch and time independently. Waves says the plug-in can preserve the source material's audio quality while shifting pitch over an octave and while doubling or halving duration. SoundShifter has three modes: Parametric and Graphic modes manipulate pitch and duration offline; Real Time mode affects pitch only.

Waves' first vocoder plug-in, Morphoder offers useful features such as formant shifting. Morphoder includes a stereo, 8-note polyphonic soft synth; a noise generator; and a 5-band, postvocoder EQ.

TransX, a transient proces-

sor, shapes the attack and release of processed sounds. Waves says it's most effective on sounds with a sharp attack, such as percussion or sax. Wide-band and multi-band variations accommodate different types of material. For controlling dynamics on recorded tracks, TransX offers a useful alternative to traditional compression.

To add dimension to your recorded tracks, Doubler creates the illusion of overdubbing by applying delay and pitch modulation. Doubler provides 2- and 4-voice doubling, and each part can be detuned as much as a semitone. Each voice has controls for gain, pan, delay, feedback, detune, and modulation. Waves; tel. (865) 546-6115; e-mail info@waves.com; Web www.waves.com.



GIGAPULSE™

The real-time convolving reverb plug-in that lets you sample actual acoustic spaces.

The **Acoustic Space** window displays sound source location or a dimensional drawing of the space.

Impulse Sets are organized by bank.

Save a **Preset** with your custom edits.

Use **Cascade** to combine two impulses and create a new reverb.

Sim Stereo turns a mono input into a stereo output.

Position your sound source in the **Placement Selection** grid to choose an impulse taken from an unlimited number of positions.

Even the most "realistic" conventional reverb generators are just a series of synthetic, digital delays looped together. **Convolution** offers a better way to produce reverb by using an **actual recording of a room**, much like samplers use a guitar or a drum set recording to create realistic instrument sounds.

TASCAM's new GigaPulse™ is a **real-time convolution reverb VST plug-in for Windows**®.

It generates the most lifelike reverberation ever by using recordings made in real acoustic spaces. Plus it includes the tools to convert your own

sampled rooms to GigaPulse format.

Our patent-pending, breakthrough technology also adds microphone modeling, selectable room position and tail model processing to the convolution engine for unparalleled fine-tuning of reverberation parameters.

But the real revolution is GigaPulse's reverb quality — so realistic that instruments, samples and vocals come to life. Even if you thought you'd heard it all when it comes to reverb plug-ins, you haven't until you've experienced GigaPulse. Visit a TASCAM dealer for a demo today. ◀



GigaPulse ships with a great collection of drum rooms, reverb plates echo chambers, classic processor models and a set of modern and vintage mic models.

Integrated Mid/Side decoding.

Tail Model lets you fine tune the decay of the reverb impulse for more efficient use of your CPU resources.

Change the **Perspective** to model the effect of moving a mic closer to the source, while maintaining imaging and proper phase alignment.

REPLACEMENT MIC

- Neumann M50
- Neumann® M150
- Neumann® M49
- Neumann® U47**
- Neumann® U67
- AKG® C12
- AKG® C12A
- Telefunken® ELA-M251
- RCA® 44BX ribbon
- RCA® 77DX ribbon

TASCAM GIGAPULSE™

- ▶ Acoustic space modeling via exclusive convolving algorithms
- ▶ Perfect for capturing room characteristics during remote recordings
- ▶ Create new impulses from your own recordings
- ▶ 2D mic/source placement
- ▶ Apply mic modeling from a selection of vintage microphones to the environment or use it alone
- ▶ Impulse libraries will be available from TASCAM or download numerous freeware impulses from the internet



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TASCAM
www.tascam.com

▶ **ARTURIA CS-80V**

Arturia's CS-80V (Mac/Win, \$249) is a software emulation of the Yamaha CS-80, one of the first polyphonic analog synths and the first production model with polyphonic aftertouch. The CS-80 was notorious for its tuning instability, weighed 220 pounds, and in 1976 cost \$6,900. Nonetheless, thanks in part to devoted users such as Vangelis, Stevie Wonder, and Toto's Steve Porcaro, its gorgeous sound and impressive capabilities were so in demand that Yamaha produced and sold around 2,000 of these instruments. When Arturia surveyed its customers to determine which emulation to build next, the CS-80 was high on the list.

CS-80V retains all the features of its namesake, including 8-note polyphony, built-in chorus and ring modulation, and a virtual ribbon controller. It adds an arpeggiator, 8-part multitimbral performance, and a modulation matrix with 12 sources and 38 destinations. Its synthesis architecture offers two anti-aliasing oscillators,



four filters, four ADSR envelopes, two LFOs, and two amplifiers per voice. CS-80V supports 32-bit, 96 kHz audio and ships with more than 400 presets.

CS-80V runs standalone in Mac OS X using CoreAudio and in Windows using ASIO or DirectSound. It also operates as a DirectX, RTAS, HTDM, MAS, Audio Units, or VST instrument plug-in. Windows users will need at least a Pentium II/500 MHz, 128 MB of RAM, and Windows 98, 2000, ME, or XP. Mac users will need a minimum G3/500 MHz, 128 MB of RAM, and Mac OS 9.1 or OS X 10.2. Arturia; e-mail info@arturia.com; Web www.arturia.com.

▼ **HERCULES TECHNOLOGIES 16/12 FW**

An impressive buy, the new Hercules 16/12 FW (Mac/Win, \$599) is a FireWire-based audio and MIDI interface with 16 audio inputs and 12 audio outputs. Mounted on the rear panel are 12 analog inputs, 8 analog outputs, coaxial stereo S/PDIF I/O, and optical stereo S/PDIF I/O, all of which may be used simultaneously for recording and playback. On the front panel, two analog inputs feature Neutrik combo connectors with switches to select from line-, guitar-, or mic-level inputs. The built-in stereo mic preamp offers 48V phantom power, and both front-panel audio inputs have individual Gain controls. The 1U rackmountable unit sup-

ports 24-bit, 96 kHz audio, and is compatible with most audio applications.

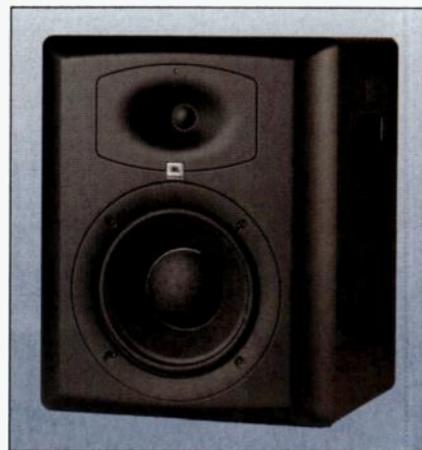
The 16/12 FW also serves as a 2-In, 2-Out MIDI interface that handles 32 MIDI channels. One pair of MIDI ports is mounted on the front, the other on the rear. Also on the rear are connectors for word-clock I/O and FireWire.

The 16/12 FW is bundled with special editions of Arturia Storm and Ableton Live, which include over 900 MB of sound files. Also included are drivers for CoreAudio on the Mac, and ASIO 2.0, GSIF, and WDM on the PC. Hercules Technologies/Kaysound (distributor); tel. (800) 343-0353 or (514) 633-8877; Web <http://us.hercules.com>.



▼ **JBL LSR6328P REFERENCE MONITORS**

JBL Professional recently unveiled the LSR6300 series of monitor speakers, which includes the LSR6328P (\$1,339), a bi-amplified model with an 8-inch woofer and 1-inch tweeter. According to JBL, the hallmark of the series is that it minimizes the acoustic properties of the room. The system has a built-in parametric equalizer that helps to eliminate standing waves and other problems caused by the listening environment, making the speaker ideal for project studios of any size. (An optional RMC Calibration Kit is available to measure room response and make adjustments.) Boundary compensation circuitry assists in overcoming the position-dependent spectral shift that occurs when a monitor is mounted on a wall, in a corner, or on a surface. JBL's Linear Spatial Reference technology also contributes to a flat off-axis response in the mix position and at any distance.



The LSR6328P drives low frequencies with 250W into 2Ω and high frequencies with 120W into 4Ω. The woofer has a carbon-fiber composite cone, dual 1.5-inch voice coils, and a third coil that acts as a dynamic brake. The magnetically shielded tweeter is made of a titanium composite with an elliptical oblate spheroid waveguide. A high-density baffle reduces enclosure resonance, and built-in handles and mounting points make transporting and positioning easier. The LSR6328P's frequency response is stated at 50 Hz to 20 kHz, +1/-1.5 dB, but low frequencies extend down to 36 Hz, -10 dB. JBL Professional; tel. (818) 894-8850; e-mail info@jblpro.com; Web www.jblpro.com.

FOR OVER 30 YEARS LEXICON HAS BEEN IN WORLD-CLASS RECORDING STUDIOS

NOW YOUR HOME CAN BE ONE OF THEM

ΩMEGA
DESKTOP RECORDING STUDIO

Lexicon has taken a whole-system approach to desktop recording. Omega Studio is an integrated computer recording system that includes the Omega 8x4x2 USB I/O mixer, Pro Tracks Plus 32-track recording software and Pantheon world-class Lexicon reverb plug-in. Omega Studio contains all of the components necessary to transform your computer into a professional 24-bit recording studio.

Whether you're working on your first demo or your fifth gold record, Omega has the performance to produce your masterpiece.

Maybe you don't have the coin to record in the city of Westminster on Abbey Road, but that's no reason your music shouldn't sound like it.

Visit your local Lexicon dealer today and see what Omega can do for your studio.



Omega 8x4x2 USB I/O mixer

Differentiating itself from standard computer I/O boxes which are typically based on a patch-bay paradigm, the Omega 8x4x2 USB I/O mixer is based on a mixer paradigm and includes input, output and mixing functions that support a variety of tracking/monitoring applications while requiring no additional mixing hardware. The I/O mixer is packed with professional features such as ultra-transparent, high resolution A/D converters, extremely low-noise mic preamps with 48-volt phantom power and active balanced line level inputs. MIDI and S/PDIF ports allow connection to a variety of digital equipment.

Pro Tracks™ Plus Recording Suite

Pro Tracks Plus is an easy-to-use, comprehensive 32-track recording suite that includes all the modules you'll need to track, edit, process, sequence and mix your masterpiece. Not only does it include intuitive non-linear editing, plug-in support, and acidized looping features, it contains a full featured MIDI sequencer with outstanding event editing and powerful automation features as well as soft synth support.

Pantheon™ Reverb Plug-in

From the name synonymous with "world's best reverb", Lexicon brings you Pantheon. With 35 factory presets, 6 reverb types and a simple yet powerful user interface, Pantheon is an indispensable tool for your recording studio.



lexicon[®] PRO

▶ **TASCAM GIGAPULSE**

Tascam's first VST plug-in, GigaPulse (Win, \$299), is a real-time convolution reverb processor for Windows, and the first that includes mic modeling. GigaPulse can sample a room, a mic, even another signal processor, and apply their acoustical properties to your DAW recordings. With GigaPulse's Perspective slider, you can move the location of the mic or sound source through virtual space while maintaining phase and stereo imaging.

You can create and import your own impulse recordings to create new models; sample a room from up to 18 locations, and GigaPulse can re-create them during your

recording session. A graphic display simplifies placement within the virtual room, and a Cascade function lets you combine impulse recordings to create a new impulse.

A tail-extension algorithm conserves your computer's processing cycles so you can use multiple instances in the same project. You can apply mic modeling independently or in an acoustical-environment emulation that lets you adjust the perceived distance of the mic from the source. In addition to sampled rooms and



reverb plates, GigaPulse ships with a collection of studio mic models. Tascam; tel. (323) 726-0303; Web www.tascam.com.

▼ **BROADJAM METAJAM**

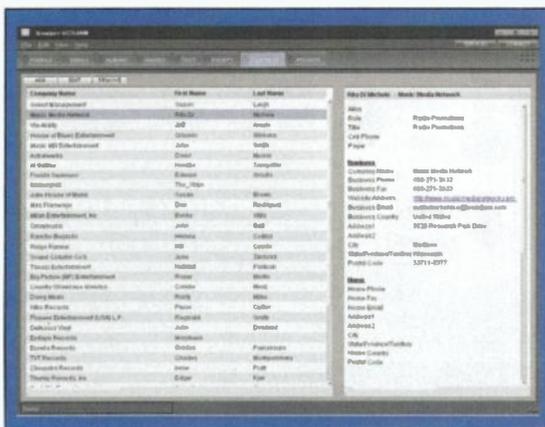
Broadjam's Metajam (Mac/Win, \$199) is comprehensive career-management software for musicians. To help you

promote and distribute your music, Metajam supplies tools such as a top-tier membership in Broadjam's online community, which gives you an Artist Profile page and other exclusive benefits.

Metajam lets musicians organize their online songs and embed metadata into their music. The metadata contains information such as composer, genre, and label, making it easier for potential licensors to find music for film, ads, or other purposes. Metajam's Contact List Manager supplies information about 1,500 record labels, publishers, venues, and other industry connections; it's also an ideal way to keep track

of your fan list. Metajam provides templates for creating press kits, flyers, and other materials without a graphic designer.

Metajam collects and displays your publicity photos, album covers, and logos for print and Web publishing. It can keep track of your performances and events, including detailed information about venues, and publish that information on your Broadjam Artist Profile page. Simply follow step-by-step instructions to enter your data into Metajam, and it will organize and upload it to your Web site. Metajam requires at least a Pentium/466 MHz, 64 MB of RAM, and Windows 98 SE, 2000, ME, or XP. For Mac users, minimum requirements are a G4/233 MHz, 64 MB of RAM, and Mac OS 9. Broadjam; tel. (608) 271-3633; Web www.broadjam.com.



▶ **LITTLE LABS MULTI Z PIP**

The Multi Z Professional Instrument Pre-amp 3.0 (\$600) is Little Labs' successor to its Multi Z Direct Box. It has so many updated features that it's being touted as an instrument preamp, a re-amplifier, a direct box, and even a mini instrument mixer—all at the same time. Thanks to source-impedance-optimized circuitry, the compact Multi Z PIP offers the same clarity and punch that made the previous model popular, according to the manufacturer. Incorporating ten years' worth of custom modifications to its predecessor, the new unit offers a choice of balanced line-level transformerless output, line-level transformer-

isolated output, or mic-level transformer-isolated output. It has a special instrument-pickup emulation transformer output with an insert upstream of the transformers.

The Multi Z PIP serves as a high-fidelity mixer by summing four inputs to the output. In addition, an independent re-amplifier circuit facilitates interfacing with vintage effects. On the front panel, a four-position Input Circuit Select knob lets you choose Hi-Z, Mid-Z, Lo-Z, or Speaker input levels. Rear-mounted XLR and TRS jacks serve as balanced and unbalanced outputs. A rack-

mount multichannel version is also available for stage or studio installations. Little Labs; tel. (323) 851-6860; e-mail littlelabs@littlelabs.com; Web www.littlelabs.com.



Sounds good enough to eat.

Today's Special



If you're looking for delicious sound, meet the Bluebird, Blue Microphone's new Class A discreet condenser mic. Combining the best characteristics of our award-winning designs in a single package, the Bluebird is uniquely versatile, with applications ranging from vocals to electric and acoustic guitars, drums, percussion, piano, horns, strings, and any other application where crystal-clear sound quality and detail is of the utmost concern. It's truly a microphone of exceptional quality, cutting-edge design and superior craftsmanship for even the pickiest of audio gourmets.

The Bluebird comes with the Bluebird Accessory Pak - BirdCage Pop Filter, BirdNest Shockmount and Blueberry Cable.



Steak & Tuna Salad	\$1.25
Preamp Pot Pie (Giles' Favourite)	\$1.75
Veal à la Virella	\$1.90

"The Bluebird Cafe serves up some of the best audio vittles in the whole tri-state area. Whenever I'm travelling through, I always stop in and sing its praises"

- Simon Gooddie, *EarCandy Review*

We refuse the right to serve. Please advise all inquiries to John Given, barrister at law, 156 Rafters, Westbury, New York. No bars, no service.

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The Bluebird Cafe

Try these lastly

PLATINUM COMBOS!



Our chef has outdone himself with these special combos featuring three best-selling Focusrite Platinum Series entrees along with the scrumptious new Bluebird Mic and accessories. Not only are these special creations aurally satisfying, but the savings are even more delectable. Bon appétit!

Combo NUMBER 1 VOICEMASTER PRO PAK

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Let's Split!

How to harness the awesome power of split-band compressors.

A close friend of mine once told me he couldn't understand why recording engineers felt they needed a split-band compressor in their arsenal of studio gear. He held that a split-band compressor (also known as a multiband compressor) was a complex solution for a simple task—controlling audio dynamics—and therefore unnecessary. But he was dead wrong.

With the twist of a few knobs or virtual controls, a split-band compressor can pull off amazing feats that a single-band (aka broadband) compressor—or any other type of processor—couldn't accomplish in a million years. For example, a split-band compressor can easily prevent an acoustic guitar, cello, or upright bass from sounding boomy on low notes without thinning out warm formants when only high notes are present. Have a vocal track that's too shrill on several isolated phrases? Taming the sirens is child's play for a split-band compressor, and it won't eliminate intelligibility and detail in the

process or force you to park one hand on your EQ knob for the entire mix. Split-band compressors can also make the bottom end of a mix sound huge while simultaneously increasing headroom. Try doing *that* with an equalizer!

What enables a split-band compressor to perform such heroics is its multiband nature. Unlike a broadband compressor, which squeezes the dynamic range of its audio-input signal across its entire frequency spectrum, a

By Michael Cooper

split-band compressor uses a divide-and-conquer strategy to independently treat discrete frequency bands. It splits the audio signal into multiple bands, compresses each band independently of the others as needed, and then recombines the outputs of the bands into a single (mono or stereo) broadband signal. Because a different set of controls is dedicated to each band, you can, for example, slam the bass while leaving the highs untouched or, conversely, de-ess the highs without squashing the low end.

MIKE CRUZ

Let's Split!

You can do a lot more with split-band compressors than that. This article will describe several applications and look at a representative sampling of the split-band compressor products—both hardware and software—that are currently available on the market.

But before I explore those subjects, an overview of key features and controls of split-band compressors is in order. I'll forgo introductory explanations of how threshold, ratio, attack, release, and makeup-gain controls work; you can read about the fundamentals of compression in my article "The Big Squeeze" in the February 2001 issue of *EM*, available online at www.emusician.com.

Because of their complexity and their ability to destroy pristine audio if used indiscriminately, most split-band compressors are poorly suited for beginning recordists who don't have a firm understanding of the basics. But if you're comfortable with using broadband compressors and want to take dynamics control to a

much higher level, don't wait—let's split!

INDEPENDENT STUDY

Most currently available split-band compressors offer from three to five independent bands per channel and handle both mono and stereo audio. I find that three or four bands are plenty for most applications in which individual tracks are treated. For mixing and mastering work—which often combines a broad palette of instruments, a wide range of spectra, and percussive and nonpercussive elements—I like to work with as many as five independent bands for each channel.

A good split-band compressor gives you broad control over the width of each of its bands. Typically, you'll adjust the bandwidth by specifying the crossover frequencies at the lower and upper ends of the band. For example, you might choose crossover frequencies of 250 Hz and 2.5 kHz when working with a 3-band compressor. In that case, the first band would range from

250 Hz down to the lower limit of the compressor's frequency response (typically 20 Hz in analog split-band compressors, and as low as DC in digital units). The second band would range from 250 Hz up to 2.5 kHz, and the third band would cover frequencies from 2.5 kHz to the upper frequency-response limit (generally 20 kHz or higher). Using that setup, you could separately compress the bass frequencies (below 250 Hz), midrange (from 250 Hz to 2.5 kHz), and highs.

For optimal flexibility,

try to find a split-band compressor with crossover-frequency choices that overlap to a high degree. That might allow you to, for example, assign two bands to the bass frequencies, one to deal with the lowest frequencies and the other to deal with the upper bass.

A user-friendly and powerful split-band compressor should offer separate threshold, attack-time, release-time, makeup-gain, and ratio or range controls for each band. A range control is similar to a ratio control in that each adjusts the intensity of compression applied to a signal above threshold. However, a range control also limits the *maximum amount* of gain adjustment that can occur as a result of dynamics processing in its associated band. So although a high ratio can cause an ever-increasing amount of gain reduction as the input signal rises farther above the threshold, a range control specifies the maximum amount of gain reduction that can take place, even with a high ratio applied.

I'M IN THE BAND

To illustrate why separate *in-band* (as opposed to global) controls are so useful, imagine a situation in which you're applying split-band compression to a problematic mix that has a generally weak bottom end, specific bass-guitar notes that are too loud, and occasionally severe vocal sibilance.

To make the bottom end of your hypothetical mix sound full without accentuating the louder bass-guitar notes, set a fairly low threshold and a high ratio or range for the split-band compressor's bass band (treating, say, all frequencies below 250 Hz). By setting the threshold slightly higher than the level of the generally weak bass energy, you allow the weak bottom end to pass through the compressor untreated. However, loud bass notes would trigger the bass band's compressor and



FIG. 2: The BSS DPR-901 II can be configured for either single-channel, 4-band operation or 2-channel, 2-band processing.



FIG. 1: The Arboretum Systems Ionizer applies dynamics processing across 512 discrete frequency bands.

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Let's Split!

be reduced dramatically in level, thanks to the high ratio or range control setting. You'd probably (but not necessarily) want fairly slow attack and release times for the bass band, in order to avoid potential pumping when the compressor kicks in and distortion when it releases. Now that you've tamed all the spikes in bass-energy level, you can boost the bass band's makeup gain to raise the overall level of the bottom end and achieve a beefy mix.

After you've dealt with the thin and erratic bottom end of a problematic mix, you turn your attention to the searing vocal sibilance that remains. Applying a static EQ cut to the sibilant frequencies is a poor solution because that would also dull the crack of the snare drum and decrease the intelligibility of the vocals during phrases that aren't sibilant. Split-band compression is the answer here as well. A suitably high threshold in the high-frequency

band (with the highest crossover frequency set to roughly 5 kHz) allows loud vowel sounds to pass untreated but causes sibilant consonants to trigger the in-band compressor. You want a high ratio or range setting and very fast attack and release times for this application so the compressor will kick in quickly, extinguish the sibilance, and cease gain reduction before any nontransient material in the high-frequency band is audibly affected. Since you don't want to boost the highs at all in this example, keep the makeup-gain setting at 0 dB (unity gain).

Such a treatment of your hypothetical mix clearly illustrates the power of split-band compression. Aside from the high ratio or range settings used in both the low and the high band, the settings for the two treated bands are as different as night and day. That is, each band was processed independently and in dissimilar fashion, and the midrange band was left completely alone. That power and flexibility make a split-band compressor one of the ultimate tools for engineers.



FIG. 4: The creamy-sounding VintageWarmer from PSPaudioware provides both broadband and split-band compression modes.

I'LL PASS

In addition to the above-mentioned controls, a split-band compressor should ideally have independent bypass controls for each band. Bypassing and then activating each band in turn allows you to hear the effect that compression is having in each band, while preserving your painstakingly wrought settings. In-band bypass controls also allow you to prevent unintentional compression in any band (such as the midrange band in our example above) without having to assign a 1:1 ratio or a 0 dB range setting. Audio fidelity will also be best preserved if the bypass is the hardwire type (which routes the input directly to the output in hardware units).

Knee adjustment is another useful feature for split-band compressors. The knee adjustment (typically a global control that affects all bands simultaneously) might offer a choice of different fixed settings, or it might be continuously variable.

Some split-band compressors offer a toggle switch (whether real or, in software products, virtual) that alternates the response of the compressor's attack and release times between your manual settings and program-dependent or program-sensitive time constants. A program-dependent mode ignores your



FIG. 3: MOTU's MasterWorks Compressor offers three independent bands of processing and a comprehensive feature set.



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Let's Split!

manual adjustments and adjusts attack and release times in response to the characteristics of the input signal. A program-sensitive function, on the other hand, *modifies* your manual settings as needed to better handle the current program material without pumping or causing distortion.

The most user-friendly split-band compressors offer a variety of meters to help you fine-tune your settings. At the very least, I like to see a main output-level meter that shows the summed signal from all bands, as well as separate gain-reduction meters for each band. If the compressor also features global clipping meters for each channel and metering to indicate how in-band energy compares to the threshold level, I'm in hog heaven.

SHOW ME THE TOYS

Now that I've covered the key features and controls of split-band compressors, I'll take a brief look at a sampling of both hardware- and software-based split-band compressors currently available. This is neither a roundup of every multiband compressor in existence nor a shootout of the products mentioned. However, I will point out especially noteworthy attributes of each product.

Most of the split-band compressors I'll discuss actually fall into the broader category of *multiband processors*. That's because they perform other types of multiband processing—such as gating or expansion—in addition to compression. Most multiband compressors can also perform multiband limiting, simply by increasing the ratio, attack



FIG. 6: The 3-band Tube-Tech SMC 2B is the world's only all-tube split-band compressor.

time, and knee hardness. Except where noted, all of the offerings listed accommodate both single- and dual-channel operation.

One last point: split-band compressors are sometimes referred to as *dynamic equalizers*. There really is no practical difference between a split-band compressor and an equalizer that dynamically boosts or cuts the energy in a given band in response to varying levels in that band. A dynamic equalizer might use center-frequency and bandwidth controls to accomplish the same thing that split-band compressors achieve with crossovers, but what distinguishes the two product categories from each other is mostly a matter of semantics.

IONIZER

Much more than just a split-band compressor, the software-based Arboretum Systems Ionizer (\$499) also performs multiband noise reduction (downward expansion), upward expansion, limiting, equalization, and frequency morphing (applying one sound's frequency characteristics to another sound, for creating vocoding and other effects). Ionizer is available in AudioSuite, MAS, Premiere, and standalone versions for the Mac, and as a DirectX plug-in for the PC.

Ionizer's split-band-compression function sounds great, but the graphical user interface lacks certain controls and metering, making compression ap-

plications quite unwieldy (see Fig. 1). The interface generates red, blue, and black graphical curves alongside an x-y plot of your audio's frequency response. Your subsequent placements of those colored curves determine the threshold, ratio, and range of processing across 512 discrete frequency bands. You determine the crossovers for each band by creating and dragging breakpoints along each curve. Because Ionizer provides so many bands to work with, in-band makeup gain and bypass controls are necessarily omitted. Also, attack and release controls are global, affecting all bands at once. The only metering provided is an imprecise color bar that dynamically alters its color and lightness to indicate the relative amount of processing across the frequency spectrum.

BSS DPR-901 II DYNAMIC

The BSS DPR-901 II (\$1,549) is a 1U rackmountable processor that can operate as a single-channel, 4-band unit (for mono applications) or a 2-channel, 2-band device (see Fig. 2). It provides a per-band maximum 30 dB of compression or 16 dB of expansion.

The DPR-901 II approaches split-band compression in the guise of an equalizer, using center-frequency and bandwidth controls in lieu of crossover controls to determine each channel's bandwidth. Each band sports its own control for adjusting the intensity of processing, along with an independent



FIG. 5: Most parameter values for the TC Electronic Finalizer Express are determined by the unit's 25 presets.

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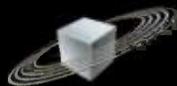
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Let's Split!

threshold control and a bypass switch.

Comprehensive multisegment LED meters for each band show gain reduction or expansion on an arbitrary scale rather than in decibels. A Threshold LED meter shows signal level above and below the threshold point in decibels. Manual and program-dependent time constants are offered. The filters for bands 1 and 4 can be switched between bell-curve and shelving response. Bands 2 and 3 can be switched to provide either narrow- or wide-band operation, allowing—when used in conjunction with the other bands—simultaneous split-band and broadband compression and expansion in one unit.

I've worked with the original DPR 901 only, and found it to be an extremely transparent unit. So transparent, in fact, that I often found myself slamming the meters in order to achieve more than a subtle effect.

MASTERWORKS COMPRESSOR

MOTU offers the MasterWorks Compressor as a standard MAS plug-in with Digital Performer (Mac, \$795; reduced pricing is available for upgrades and

crossgrades). This split-band compressor offers three discrete bands with adjustable crossovers (see Fig. 3). The crossovers can be set over an exceedingly wide range, with one notable exception: the lowest crossover can be adjusted only down to 125 Hz, which is a tad high for some bass-guitar, kick-drum, and mastering applications. The plug-in instantiates in mono-to-mono or stereo-to-stereo variants.

Each of the MasterWorks Compressor's bands provides controls for independently adjusting attack and release times, threshold, ratio, and makeup gain. Separate bypass and solo controls also serve each band. The solo function allows you to hear the compression effect in one band while the other bands are muted, which can be quite helpful. Each band also sports input, output, and gain-reduction meters and a compression graph (depicting the in-band compression slope and certain parameter values). Master input- and output-level controls, with associated meters and peak-clear function, round out the MasterWorks Compressor's comprehensive feature set.

VINTAGEWARMER

PSPaudioware's VintageWarmer (Mac/Win, \$149) delivers creamy, analog-sounding split-band and broadband compression modes at a bargain-basement price. This downloadable plug-in is available in VST and RTAS versions for the Mac (including OS X) and in VST and DirectX formats for Windows.

Now the bad news: VintageWarmer has a very quirky control interface, which is split between two alternate windows (see Fig. 4). Each of VintageWarmer's three bands has its own threshold and release-time controls, but only the low and high bands offer in-band boost/cut controls. (There is an unwieldy work-around for adjusting mid-band gain.) The gain controls are

placed before dynamics, forcing you to move threshold controls higher whenever you boost in-band gain (assuming you want the degree of compression to remain the same). Master threshold and Speed (ganged attack and release) controls complicate operation by interacting with the above-mentioned in-band threshold and release controls. A global knee control is offered in lieu of in-band ratio knobs. You can't solo or bypass individual bands, nor can you adjust the attack time for each band independently. In-band meters (including threshold indicators) are also absent. The owner's manual is vague and confusing, screen redraws are slow, and save routines (for storing custom presets) are unfriendly. On the positive side, you get master input- and output-level controls, excellent global metering (with clipping indicators and switchable ballistics), and a low-band crossover that can be adjusted as low as 25 Hz.

Is it quirky? Yes. Is it awesome-sounding? Yes! Don't be put off by VintageWarmer's interface. You'll quickly become accustomed to it and get incredible results.

FINALIZER EXPRESS

For recordists who want to use split-band compression on their projects but don't want to sweat the learning curve, TC Electronic's Finalizer Express Studio Mastering Processor (\$1,595) is the answer (see Fig. 5). This stereo digital multiband processor provides 25 presets, each with different fixed attack, release, threshold, and ratio values for its 3-band compressor and its limiter. Its crossovers use linear-phase filters fixed at 315 Hz and 3.15 kHz. Makeup gain is applied automatically, but you can independently adjust the output level of each band downstream of the processing block. Defeatable in-band emphasis controls add additional compression and gain in their respective bands by lowering the thresholds and kicking in more automatic makeup gain.

A global input-level normalizer, an output-stage soft clipper, and an output fader add to the 1U rackmountable



FIG. 7: Waves C4 can apply compression, expansion, limiting, and EQ in any combination (one process per band) to its independent bands.

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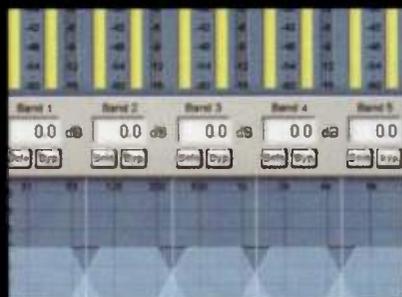
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Let's Split!

unit's value, as does a fairly generous offering of analog and digital I/O. High-resolution LED-ladder metering keeps you apprised of gain-reduction levels for each band, master I/O levels, and soft-clipper action. The Finalizer Express can operate at 44.1 or 48 kHz nominal sampling frequency.

Although the Finalizer Express is a simple solution for quick demo production tasks, I'd be wary of using a preset split-band compressor for critical mastering applications. If you want to work at higher sampling rates or you require much more manual control, the TC Electronic Finalizer 96 kHz (\$2,995) offers 88.2 kHz and 96 kHz operation, upsampling from and down-sampling to lower rates, additional multiband processing options, and in-band manual controls for attack, release, threshold, ratio, and crossover frequencies.

SMC 2B

The world's only all-tube split-band compressor, the dual-channel Tube-Tech SMC 2B (\$4,999), incorporates six optical compressors (see Fig. 6). The unit's two crossovers are continuously variable, with the low crossover adjustable down to 60 Hz. In-band threshold, ratio, attack, release, and makeup gain controls (all continuously variable) are joined by 11-segment LED displays that show gain reduction for each band. Global controls include master gain, L/R balance, and bypass. Unfortunately, individual bands cannot be bypassed.

Yes, it's extremely pricey. Nonetheless, the SMC 2B is simply the sweetest-sounding multiband compressor I've heard.

C4 MULTIBAND PARAMETRIC

The Waves C4 plug-in (Mac/Win; native version, \$400; TDM version, \$800) supports TDM, RTAS, AudioSuite, and

VST formats for both the Mac and Windows (see Fig. 7). A MAS version for the Mac and a DirectX version for Windows are also available.

C4 offers four independent bands of compression, expansion, limiting, and equalization in any combination. You can use band-limited compression for bass frequencies, for example, coupled with expansion for the highs only. The slope of the C4's widely adjustable crossover filters can be varied globally. In-band controls include threshold, makeup gain, range, attack, and release. Each band can be soloed or bypassed. Master threshold, makeup gain, range, attack, and release controls each enable you to increase or decrease associated in-band parameter values as a group, maintaining interband offsets—a great feature.

A wide-ranging knee control, toggling release-characteristic (Opto or Electro) function, master output-level fader, and Waves' outstanding ARC program-sensitive release-time mode complete this plug-in's comprehensive set of master controls. Metering is excellent, providing a threshold indicator for each band, master L/R output meters and clipping indicators, and an ingenious graphical display that dynamically shows gain reduction (or potential boost, for processes other than compression) in each band.

LINEAR PHASE MULTIBAND

Linear Phase Multiband is sold as part of the Waves Masters Bundle (Mac/Win; native versions, \$900; TDM version, \$1800). The Masters Bundle is available in TDM, RTAS, AudioSuite, and VST formats for both the Mac and Windows. Waves also offers a MAS version for the Mac and a DirectX version for Windows.

Essentially an improved and expanded version of the company's C4 Multiband Parametric Processor, the Linear Phase Multiband offers five in-

dependent bands with linear-phase crossovers (see Fig. 8). Enhancements include a trim control that optimizes headroom at the plug-in's output, dither, an automatic makeup-gain function, and Waves' pioneering Adaptive Threshold function, which automatically varies the threshold of a band to counteract frequency-masking effects. The only downside to the Linear Phase Multiband is that it's a voracious CPU hog.

The Waves Linear Phase Multiband sounds extremely transparent and offers more control than any other multiband plug-in I'm aware of. For DAW-based multiband mastering applications, it can't be beat.

APPLY YOURSELF

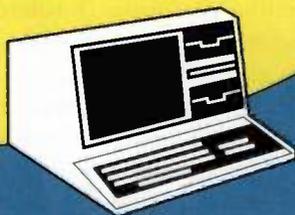
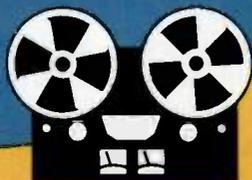
Now that you've lusted over numerous split-band compressors, it's time to put away your drool bib and get to work. Here's a look at some real-world applications for split-band compressors, beginning with treating vocals.

Vocal tracks can present a number of challenges at mixdown. One hurdle is the varying proximity effect caused by a singer moving closer to and farther away from the mic during a performance. Simply rolling off bass frequencies with a static EQ setting will cause high vocal phrases to sound thin. A split-band compressor, however, will put a lid on the proximity effect without reducing fullness when the singer reaches for high notes.



FIG. 8: Waves Linear Phase Multiband offers five independent bands of processing, ultratransparent sound, and a feature-rich interface.

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Let's Split!

A typical approach might be to set your lowest crossover frequency to somewhere between 200 and 300 Hz, depending on the mic's response at close distances to the source and other factors. Set your low-band threshold so that when vocal phrases that aren't bass-heavy occur, they barely trigger low-band compression; then raise the threshold slightly higher so that those passages then pass through the compressor untreated. Any vocal phrases that are even slightly boomy will then exceed the low-band threshold and will be compressed according to your ratio (or range), attack, release, and other settings. By the way, you can use similar settings and adjustments to take the boom out of an acoustic-guitar track.

It's easy to de-ess a vocal track with a split-band compressor. Set your highest compressor crossover to 5 kHz for treating a male singer or to 6 or 7 kHz for a female vocalist. Then set the high-band threshold so that only sibilant phrases trigger in-band compression. De-essing usually requires a high ratio

(10:1 to 50:1 is often called for), a high range (as much as 20 dB of gain reduction for extreme cases), or both, though much lighter treatment should be used for dealing with subtle problems. Set your high-band attack time as fast as possible (50 μ s works great) and set the release time to between 50 and 60 ms.

Most of the time, you can also perform light de-essing on an entire mix without noticeably affecting the sound of most of the included instruments; cymbals, triangles, and other sources that produce prominent upper partials are notable exceptions. Whereas standard de-essing techniques using a broadband compressor will usually punch "holes" in a mix (causing noticeable dips and quick recoveries in level for the entire mix), carefully de-essing a mix with a split-band compressor will fully preserve the dynamics of bass and midrange content and avoid audible pumping.

TAMING OF THE SHRILL

A vocal track that sounds shrill on select phrases can be tamed by setting two of your split-band compressor's crossovers to roughly 3 kHz and 5 kHz. Set your threshold in this band so that only the shrill passages trigger in-band compression. A light to moderate ratio or range setting is usually all that's

required to take the edge off everything but the most obnoxious banshees. On the other hand, heavy compression of low highs will dull the vocal track, so use moderation.

You can also lightly compress low highs on a guitar- or keyboard-heavy mix to prevent fatiguing edginess from rearing its ugly head during the loudest sections of your program material. But tread lightly, or your mix's detail and clarity will suffer.

Perhaps the most common use of split-band compression in modern recordings is to simulta-

neously fatten and tighten up the bottom end of a mix. Here, your ratio setting should be set according to how much the bottom end varies in intensity; widely varying bass energy requires a higher ratio than is called for when dealing with more constant levels. You'll have to use your ears to adjust the attack and release times for your particular mix, but bass frequencies are often best compressed using moderate or slow time constants. Lower your threshold until the bass frequencies sound tight, so that they don't bloom or dip too much at any point in the mix. Then increase the makeup gain in the bass band to the point where the bottom end sounds huge but does not overwhelm other elements and frequencies in the mix.

Adjusted properly, you'll often find that the mix's peak bass energy will now be lower than before you compressed it, which translates into overall greater headroom for the entire mix. That is the best of both worlds: the bottom end will sound tighter *and* you can make your mix louder if you want to.

TIME TO SPLIT

Split-band compressors have many more applications, but they all begin with careful listening and evaluation of your program material. Split-band compressors should be used only when undesirable, excessive, and *dynamic* variances in spectral energy are evident (that is, when static EQ won't fix the problem). Routine application of split-band compression on material that doesn't need it—or heavy-handed use on material that needs only small amounts—will make a dynamic and compelling performance sound lifeless and impotent, or worse. It's all too easy to go overboard with split-band compression and ruin a good thing. However, deliberate and deft use of split-band compression will give your tracks and mixes a polished sound that you can't achieve any other way.

EM contributing editor Michael Cooper is the owner of Michael Cooper Recording, located in beautiful Sisters, Oregon. Cooper's studio offers recording, mixing, and mastering services.

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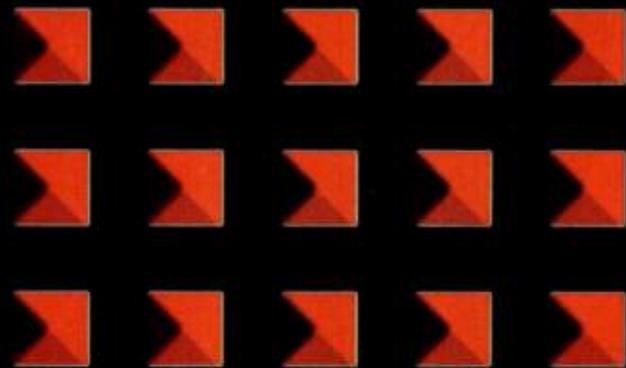


Electronic Musician

2004

EDITORS

CHOICE



A TIP O' THE HAT TO OUR FAVORITE NEW PRODUCTS OF THE PAST YEAR.

One of the wonderful—and at the same time, one of the most challenging—aspects of the Western political and economic system is that its citizens can and often must make choices. Every year, the EM editors take advantage of this freedom of choice to honor the finest new products we've checked out in the past twelve months. And every year, we struggle to choose the winners, not because the editors fight about it—we're all friends here, and besides, nobody wants to take on Steve O and his German shepherd—but because we have so many hard choices among excellent products.

The number of awards varies slightly each year because we add new categories and drop or revise old ones, reflecting the creation of new product types and the presence or absence of outstanding candidates in existing categories. Last year, for example, we added a DSP Cards category because of hot new cards; this year, that morphed into the DSP Hosts category because specialized host processors are now available in external boxes as well as on PCI cards. We did not give an award for monitor speakers last year, but the category is back this year because we had worthy candidates.

In the end, we gave awards to 27 winners in 26 categories. We had one tie (Ancillary Software), which we decided not to resolve because the two winners were equally deserving and were radically different from each other.

All award-winning products have been field-tested by EM's editors and a select group of top authors. We also solicited opinions from the editors of sister publications *Mix* and *Remix*. The final selections were made by our own technical editors: Steve O, Mike Levine, Dennis Miller, Gino Robair, David Rubin, and Geary Yelton. All award-winning products have already been covered in reviews or features or are far enough along in the review process that we feel confident about our conclusions (see the sidebar "The Award Winners in Review" on p. 64).

To be eligible for an Editors' Choice award, products must have shipped between October 1, 2002, and October 1, 2003, when we began editing our January issue. We allow some slack for products that shipped so close to the previous year's deadline that it was not possible for us to test them in time for the 2003 awards. (This was the case with our 2004 Hybrid DAW Control Surface/Audio Interface winner, for instance.) We do not allow such leeway if we believe a manufacturer could have supplied a review unit in time but intentionally delayed sending it.

Keep in mind that these are our picks among the new products we have actually tested; we cannot consider the many products we never got to check out, and we do not consider older products. We give an award to a software upgrade only if we think it offers major and significant improvements over the previous version.

And now, without further ado, please join us in congratulating the winners of the 12th annual EM Editors' Choice awards!

By the EM Staff

Ancillary Hardware

LITTLE LABS

IBP Analog Phase Alignment Tool (\$550)

Little Labs has a remarkable track record in creating elegant solutions to common recording problems. Last year it won an Editors' Choice



award for the PCP Instrument Distro 3.0 signal splitter and router. This time, Little Labs is in the winner's circle for its IBP Analog Phase Alignment Tool.

IBP stands for In Between Phase, an indication of what this device has to offer. Although most mixers and preamps have a phase-reverse switch, a simple 180-degree change in a signal's polarity may be more phase change than you need in a particular situation. The IBP gives you 0 to 180 degrees of continuous control over a mono signal. This allows you to fine-tune the phase relationship between a pair of drum mics or a miked guitar amp and a DI signal. The result of such precise control can be as subtle as an increase in presence or as obvious as higher gain and an improved transient response. The IBP tackles the job without introducing coloration, noise, or gain reduction.

Other useful features include phase-invert and ground-lift switches, and the Phase Center Lo/Hi button, which optimizes the unit for wide-bandwidth or low-frequency signals. The IBP also provides a front-panel DI input and rear-panel XLR and 1/4-inch ins and outs for reamping line-level signals.

Once again, Little Labs has come to the rescue with a product that is clearly a winner.

Ancillary Software

EXPANSION AUDIO UK

VST to AudioUnit Adapter 1.0 (Mac, \$75)

MATT INGALLS

MacCsound 1.0 (Mac, donationware)

All musicians have bread-and-butter tools that they rely on every day, but other tools, used to do special jobs, can be equally important. This year, two such occasional-use tools really grabbed our attention, and although they are intended for very different purposes, both fill important roles.

FXpansion's VST to AudioUnit Adapter converts VST plug-ins to Apple OS X's Audio Units format, expanding the world of VST effects and instruments on the Mac platform. Logic Audio 6 and Digital Performer 4 users will be especially delighted by the ease with which they can add new plug-ins to their audio arsenals.

Converting VST plug-ins to Audio Units is a one-time operation: just copy all your plug-ins to a new folder and tell VST-AU Adapter where to find them, and the program will convert them in a single pass. There's no added latency when using converted plug-ins, and VST-AU Adapter has been tested with a large number of plug-ins from a variety of manufacturers, so you can expect near-universal compatibility. If you do find a plug-in that is problematic, you can bet that Angus Hewitt, principal developer for FXpansion and one of the hardest-working men in show business, will help set things straight.

Our second winner is something altogether different. Barry Vercoe's Csound is by far the most powerful sound-synthesis programming language on the planet, but few people have the time and patience to type line after line of note statements to compose their next masterpiece. Matt Ingalls's MacCsound puts a graphical front-end on Csound and lets you use sliders, knobs, and a variety of other widgets to control your Csound Instruments in real time.

Using MacCsound, you can build custom interfaces for one or even an entire set of Instruments. Need a bunch of buttons for choosing a table for your oscillators? That's no problem. How about a row of knobs to control the various parameters of an FM synth? Easily done. The included text editor lets you get at the code beneath your GUIs, and you can run any of the Csound analysis utilities directly within the MacCsound interface, not to mention compile and play back all of your designs. You can also put Instrument parameters under real-time MIDI control and process audio with the various built-in effects.



Unmistakably Original.

ACID[®] Pro software forever changed the way music is made. Its daring technology blew open new doors to composition and creation. Its innovative interface simplified music production, and provided powerful, professional tools to musicians and producers worldwide. It started a musical revolution. Exciting. Compelling. Original. All words used to describe ACID Pro software. And the artists that use it.

ACID Pro software is the original loop-based music creation tool for the PC. Nothing else lets you create and produce your own music for audio production, multimedia projects, broadcast music beds, Websites and DV scoring as fast and effectively. Anywhere you need original music, ACID Pro software delivers.

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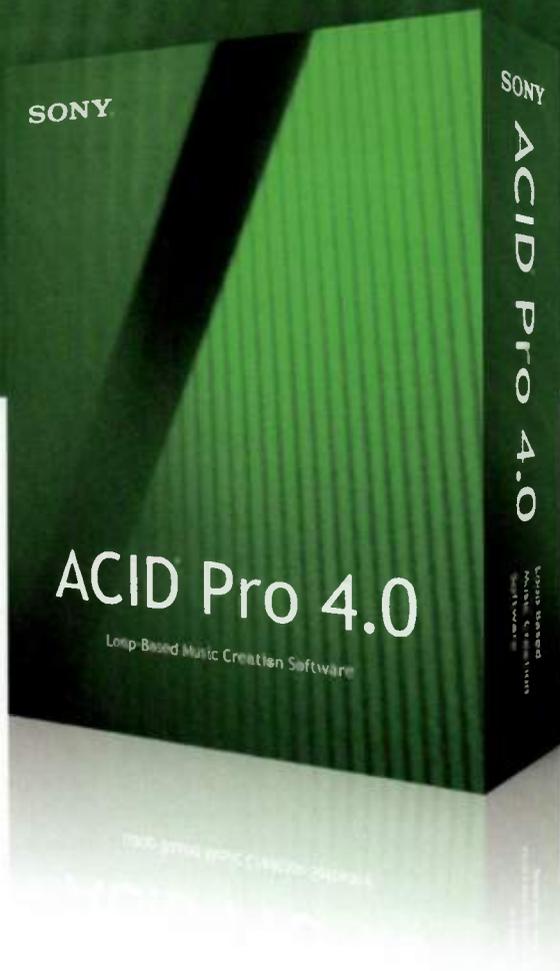
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SONY

If you're still using Csound the old-fashioned way, you're in for a very pleasant surprise. Check out MacCsound to see what a modern interface can do for the mother of all sound-design tools.



Audio-Editing Software

MAGIX

Samplitude 7.11 (Win, \$1,250)

A good audio-editing application lies at the heart of most computer-based studios, and this year we looked at several popular stereo and multitrack audio-editing programs. In the end we agreed that Samplitude Professional 7.11 clearly stood out for its long list of noteworthy improvements and its powerful new audio- and video-editing tools.

Version 7 of Samplitude has a more refined user interface and a new audio engine that supports 24-bit, 192 kHz recording and editing. It also offers 5.1-surround mixing and supports direct hosting of VST instruments and effects, including full parameter automation. To preserve the highest quality when reducing resolutions for CD burning, Samplitude now includes POW-r Consortium's POW-r dithering algorithm. And speaking of CD burning, Samplitude lets you burn CDs directly from the program, applying real-time effects, plug-ins, and crossfades on the fly—a feature that's pretty amazing.

Several of Samplitude's new tools really caught our attention. For example, the program now includes a fully implemented vocoder with its own FFT filter for editing the signal. The new Room Simulator lets you apply real-time, impulse-response-based reverb effects to your tracks and includes a 450 MB library of impulse responses for a variety of acoustic spaces. You can even edit the reverb parameters in real time as the sound plays.

We also loved Samplitude's new Amp Simulator effect for processing guitar sounds. It models an assortment of vintage British and American guitar amps, including five different amp models and ten separate loudspeaker models that you can freely mix and match.

Samplitude's many other new offerings include greatly expanded MIDI capabilities; excellent built-in effects; and Video deLuxe 2.0, a full-featured video-recording, -editing, and -authoring suite; and more. As you can see, this popular do-it-all program does even more than it did before—and that's saying a lot.

DAW Control Surface/Audio Interface

DIGIDESIGN

Digi 002 (Mac/Win, \$2,495)

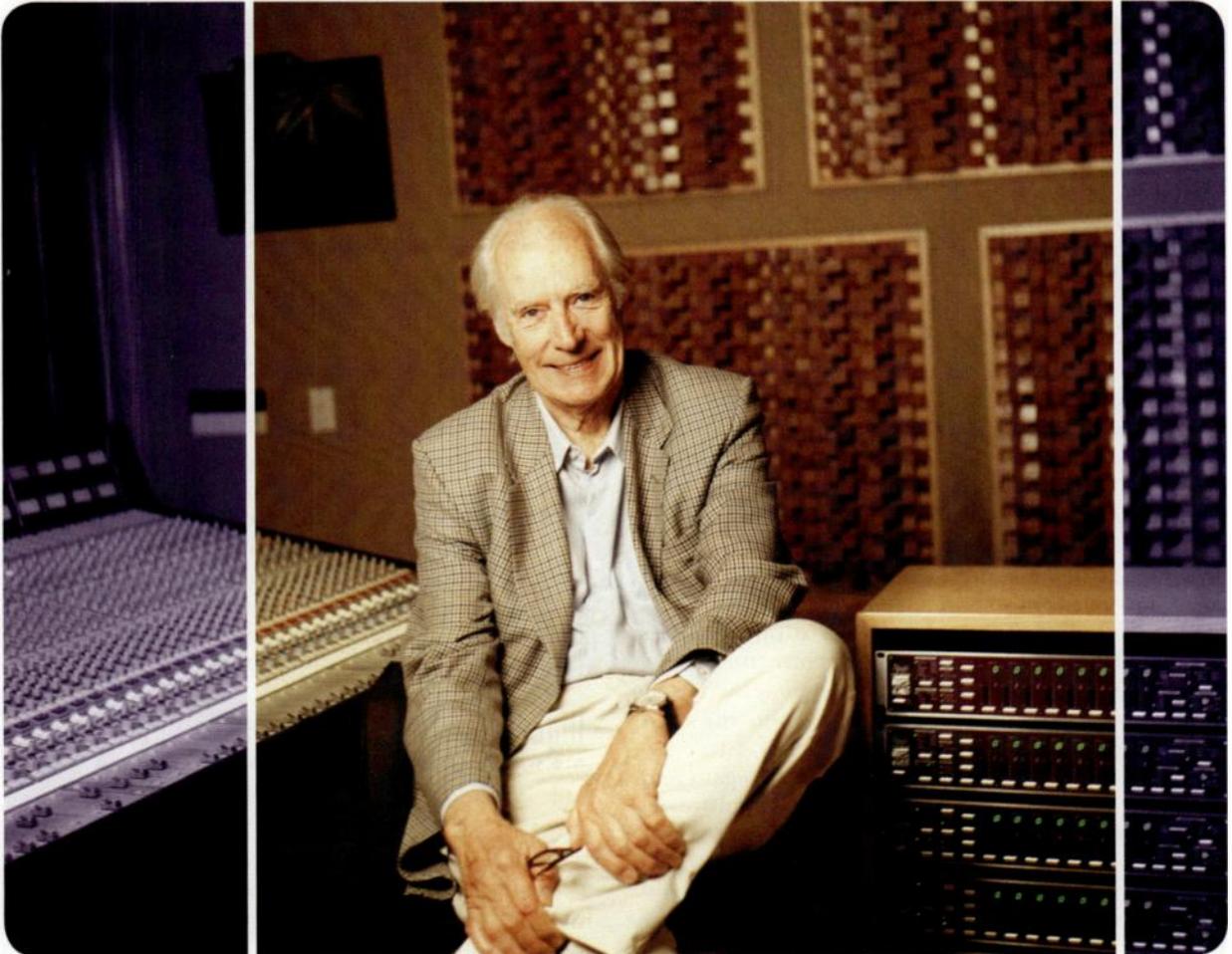
As audio products combine more features and technologies into one device, it's nice to find a jack-of-all-trades product that is a master of many. Such is the Digidesign Digi 002, which puts a control surface, a FireWire audio and MIDI interface, and a standalone digital mixer in one unit. Add to that the inclusion of Pro Tools LE (Mac/Win) and a bundle of plug-ins and you have a powerful DAW and controller capable of 24-bit, 96 kHz recording right out of the box. To sweeten the deal further, Pro Tools LE version 6.1.1 has CoreAudio, ASIO, and WAV drivers, allowing you to use the Digi 002 as an interface for your favorite third-party software.

The Digi 002 offers 14 analog inputs: 4 phantom-powered XLR jacks, 4 balanced 1/4-inch jacks operating at +4 dBu, 4 balanced 1/4-inch jacks that operate at +4 dBu or -10 dBV, and 2 unbalanced RCA jacks for -10 dBV signals. Digital I/O includes RCA S/PDIF jacks as well as optical jacks that are configurable as 8-channel ADAT Lightpipe or 2-channel S/PDIF ports. With all that and two FireWire ports, one MIDI Input, and two MIDI Outs, the Digi 002 offers quite a complement of connectivity.

The Digi 002 offers an ergonomic and intuitive control surface for Pro Tools LE, with eight touch-sensitive faders and conveniently located transport and navigational controls. The interface also includes buttons dedicated to everyday



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tasks, such as Loop Record, Nudge, and Zoom.

Away from the computer, the Digi 002 can be used as a standalone 8x4x2 digital mixer. It includes built-in effects such as EQ, delay, reverb, and dynamics processing, and you can save and recall snapshots of your favorite settings.

It's always nice to find a product that serves several functions well. For the musician whose musical life rotates between desktop, laptop, and live performances, Digidesign has given us a clear winner with the Digi 002.

Digital Audio Sequencer/MIDI Sequencer

MARK OF THE UNICORN
Digital Performer 4.1 (Mac, \$795)

As in previous years, the voting in the digital-audio/MIDI-sequencer category was an emotional roller coaster: we laughed, we cried, we sat around the campfire singing "Kumbaya," and finally we just slugged it out to see which product would win. Remember, with upgrades, we are judging the quality and extent of the upgrade, not just the overall program. This was not an easy decision to reach.

Emagic Logic 5.5 garnered support for its versatile and customizable architecture, solid cross-platform performance, and powerful music-production capabilities. But when the dust cleared, MOTU's Digital Performer 4.1 edged out the competition by virtue of its elegant and finely crafted new user interface, its intuitive design, and its nearly bottomless feature set.

With version 4.1, Digital Performer has fully embraced Mac OS X, providing extensive support for CoreAudio and CoreMIDI and at last relegating OMS and FreeMIDI to the dustbin of history. Digital Performer offers easy remapping from FreeMIDI to CoreMIDI, and it now supports OS X's MIDI-device patch-lists feature. In fact, all of FreeMIDI's hundreds of patch lists have already been ported to OS X.

Digital Performer's timing accuracy remains impressive, thanks to its support of OS X's MIDI Time Stamping feature. Version 4.1 also boasts a number of helpful enhancements, including menu improvements, support for multiple document templates, a new input/output section on each mixer channel, a greatly improved Quick-Scribe notation window, and the program's new, resource-saving Freeze Tracks command.

Arguably the biggest news, however, is MOTU's ever-expanding support for other formats and platforms. For example, Digital Performer fully supports ReWire 2.0 (now with direct MIDI I/O) and also supports Audio Units as well as its own MAS plug-ins. What's



more, in addition to its earlier OMF support, Digital Performer supports Digidesign hardware running under DAE. In other words, you can now use Digital Performer as a front end for Pro Tools|HD and other TDM-based systems. The list of improvements, both large and small, goes on much longer, but the bottom line is that Digital Performer is better than ever, and that's no small feat for this perennial award winner.

Digital Audio Workstation/Audio Interface

MARK OF THE UNICORN
828mkII (Mac/Win, \$795)

FireWire audio interfaces have become integral parts of many personal studios, offering high-quality audio, flexible I/O, and ease of setup. Although plenty of these products were introduced in 2003, we singled out the MOTU 828mkII for this award because of its impressive combination of performance, features, and value.

The 828mkII (which is compatible with both Mac and Windows) is an upgraded version of the MOTU 828, which won the Editor's Choice award in 2002. The new unit offers significant additions and improvements, including 24-bit, 96 kHz audio; front-panel mic-instrument inputs (featuring Trim controls and switchable phantom power) on Neutrik XLR/TRS combo jacks; and MOTU's CueMix DSP system, which allows for near-zero-latency monitoring. There's also an upgraded front-panel display, consisting of a backlit LCD and an array of LEDs, that makes it



New Stars

With a galaxy of microphones out there, how do you choose the right one? M-Audio's Solaris and Luna microphones are two of the brightest new lights in the audio universe. Fusing classic values and modern electronics, they embody inspired designs with looks that are out of this world. These large-capsule condensers are perfect for professionally capturing vocals, acoustic instruments, guitar amps and just about anything else—all at a price that's finally down to Earth. Whether you're looking for a great all-purpose first microphone or a fresh new sound for your mic locker, you'll find that Solaris and Luna eclipse all the rest.

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SOLARIS

Solaris

large-capsule
cardioid/omni/figure 8 condenser

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LUNA

Luna

large-capsule
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easy to keep track of the unit's many functions.

The 828mkII's 8-bus mixing section allows control of parameters like volume, pan, mute, and solo, just like on a conventional console. Although the mixing features can all be accessed from the front panel (meaning you can use the 828mkII as a standalone unit), some might prefer to use the included CueMix Console software (Mac/Win), which gives you onscreen control of the mixing functions.

I/O on the 828mkII is impressive. You get up to 20 simultaneous inputs and 22 outputs. Connections include the aforementioned Neutrik combo jacks, eight TRS inputs and outputs, two TRS Main outputs, eight channels of ADAT optical I/O, and two channels of S/PDIF I/O. Other features include word-clock in and out, ADAT sync in, and even a 1-In, 1-Out MIDI interface. Mac users also get MOTU's AudioDesk software, which is essentially the audio-recording section of the company's award-winning Digital Performer software. Add it all up, and you have another winner for MOTU.

DSP Host



ROLAND
VariOS (\$1,495)

Software that imitates musical instruments is nothing new. Nor is the idea of a chameleon-like hardware device that assumes a new personality depending on the software you load into it; in essence, that's what a personal computer does. Just in the last year or so, a few manufacturers have introduced shape-shifting DSP engines that can be programmed to perform various types of synthesis and effects processing. Roland's implementation of those ideas is a DSP host system housed in a single-rackspace module and dubbed the VariOS.

The VariOS models whatever instrument its software tells it to. Connecting it to your computer with a USB cable gives you access to virtual control panels and to a dedicated graphical audio editor and 6-track sequencer called V-Producer (Mac/Win). By performing the heavy-duty number-crunching, the VariOS frees your computer's processor for other music-production tasks. For stage use, you can also cut the connection and use the VariOS as a standalone synth and sampler.

The VariOS generates sound using VariPhrase sampling and two types of analog-synthesis modeling. Its processor analyzes pitch, time, and formant data and encodes it in a proprietary format that allows it to manipulate samples as only VariPhrase can. That makes it possible, for example, to stretch a single sample up or down in pitch

much farther than normal without noticeable artifacts. VariPhrase handles pitch shifting, beat slicing, and time stretching in real time.

A polyphonic synth model called VariOS-8 recreates the Roland Juno and Jupiter series. On your computer screen, the



software looks and operates much like a Jupiter-8, complete with oscillators, filter, EGs, and effects processing. VariOS 303 is a monophonic model that duplicates the TB-303 Bass Line, a combination synth and 16-step sequencer that was largely ignored in its time but is now in huge demand. VariOS-8 and VariOS 303 both sound terrific.

In the VariOS, Roland has made a rackmount DSP engine that not only works as an advanced VariPhase-based sampler but also resurrects analog synthesizers of the past—and according to Roland, we ain't seen nothing yet. That makes it one of the most promising devices of its kind for electronic-music production. We eagerly anticipate seeing and hearing the VariOS's continuing development as a versatile platform for sound design.

Groove Box



ROLAND
MC-909 (\$1,795)

Roland's MicroComposer (MC) series began over a quarter-century ago and continues to thrive in the form of groove-oriented music workstations. Every year, groove boxes grow more sophisticated, more economical, and more versatile. The current state-of-the-art is



In search of the perfect sound



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embodied in the MC-909, Roland's flagship Sampling Groovebox. Aimed squarely at R&B, techno, and hip-hop styles, the MC-909 offers an impressive assortment of musician-friendly features.

At its heart, the MC-909 is a 64-note XV-series synthesizer with the added advantages of traditional and VariPhrase sampling. You can expand its 16 MB of sample RAM to 272 MB and can store your samples on SmartMedia cards. An interactive 16-track phrase-based sequencer provides hundreds of first-rate factory patterns. Full-featured effects include reverb, compression, EQ, and two multi-effects processors. A versatile arpeggiator, an onboard mixer, and a USB interface complete the package.

It's obvious that years of experience went into the user-interface design. A large display and lots of knobs, buttons, and sliders present a logical layout with plenty of visual feedback and easy access to hundreds of parameters. For musical expression onstage and in the studio, the MC-909 is endowed with abundant real-time controllers, including 16 Velocity-sensitive pads, twin D Beam infrared proximity controllers, and a slider that emulates a turntable by allowing you to push and pull pitch and tempo. With the MC-909, you can meticulously assemble your songs, tweak sounds in the studio, and then alter your mix and rearrange patterns in live performance without pausing playback.

The world of groove boxes offers plenty of choices to fit anyone's pocketbook. But when we considered the MC-909's sound, flexibility, portability, and cost-to-performance ratio, we discovered that it is nothing short of astounding and an obvious Editors' Choice.

Loop Sequencers/Editors

DEVINE MACHINE SOFTWARE

Devine Machine 1.0 (Win, \$249)

This is one you have to see to believe: looping software that is so far out of the box, you'll have to rethink everything you know about working with loops to use it. But that's not a bad thing. In fact, you'll find more options for manipulating loops with Devine Machine than with almost any other software on the market. And once you get your head around the x-y graphs that are used to control every aspect of your loops, you'll be composing music that would be nearly impossible to create using more-familiar tools.



Devine Machine can play back up to eight mono or stereo, 16- or 32-bit loops simultaneously and lets you manipulate the order of loop slices in real time. You can adjust a variety of parameters—pitch, pan, delay level, and more—for each loop as the loop plays back, and you can save presets containing all the current settings at any point.

But that's only half the fun, because while up to eight loops are playing, you can trigger another 24 loops using a MIDI keyboard and can determine whether the new loops will replace or sound along with the original 8. Sure, you'll need a powerful computer to take advantage of all these options, but Devine Machine is up to the task if you are.

Colorful graphics, a good manual, and excellent sound quality round out this unusual application. Though the unusual interface may temporarily have you wondering "Where do I find all the good stuff?" a few hours with Devine Machine will bring your loops into entirely new realms.



Microphone (over \$600)

AUDIO ENGINEERING
ASSOCIATES
R84 (\$1,000)

In some of the Editor's Choice categories this year, there were close votes and long debates between editors before a winner was declared. Not in this category, however, because for microphones costing more than \$600, the AEA R84 was a "slam dunk."

Why all the excitement about this product? The figure-8 R84 is an excellent-sounding ribbon mic that lists for \$1,000, a very reasonable price in the ribbon world. Although the R84 uses the same long, low-tension ribbon as its

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INTAKT provides all the necessary tools for precision loop slicing and creative beat surgery. Whether it's a matter of slight cosmetic improvement or complete sonic reconstruction, you can trust INTAKT with your most precious grooves. It's just a simple operation. INTAKT combines beat slicing, time stretching and classic sampling into one comprehensive loop tool. Give sliced grooves a new feel with first-class effects and modulation, then stretch, compress and sync to any tempo. A stunning 1.2 GB library provides plenty of great loops, each carefully prepped for surgery.

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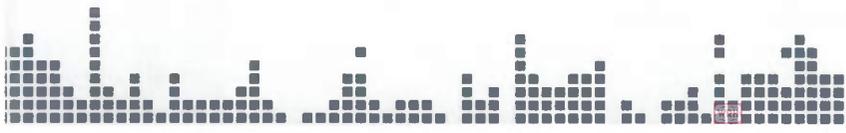


Samples by:



NI NATIVE INSTRUMENTS
SOFTWARE SYNTHESIS

GENERATE THE FUTURE OF SOUND



sibling the R44C (which is a reproduction of the classic RCA 44), the R84 is an original design, not a replica. The R84 is also surprisingly light, tipping the scales at only 1.75 pounds.

Our reviewer was extremely impressed with this mic, describing its tone as "gorgeous." He tried it on a variety of sources, including guitar amps, drums, soprano saxophone, bass clarinet, and trumpet, and he used it as both a close mic and a room mic. In almost every instance, the R84 produced excellent results. And thanks to the mic's surprisingly good (for a ribbon) high-end response, it also performed admirably on vocals.

Our reviewer also tested the R84 against several other well-known (and in some cases much more expensive) ribbon mics, and the AEA mic held its own quite nicely, exhibiting a big sound, lots of low-end punch, and plenty of high-end clarity. Wes Dooley and the other folks at AEA get a well-deserved round of applause (and, of course, the award) for the R84.

Microphone (under \$600)

RØDE

NT1-A (\$349)

A number of notable mics costing less than \$600 shipped in 2003, including Blue's Ball phantom-powered dynamic and Audix's D6 kick-drum mic. But we chose the large-diaphragm, fixed-cardioid Røde NT1-A because it represents an amazing value.

The NT1-A didn't take us entirely by surprise:

Røde has built its reputation by making high-quality, affordable microphones. But even with the company's history of success in that area, the NT1-A is perhaps Røde's most outstanding achievement from a price-performance standpoint.

Although it's an offshoot of the NT1, the NT1-A is completely redesigned on the inside and benefits from new manufacturing processes. One of the mic's most astonishing attributes is its incredibly quiet operation: it has a self-noise spec of 5 dBa, one of the lowest for any mic anywhere. Considering the NT1-A's \$349 list price, that spec is even more remarkable.

But specs only tell part of the story. Ultimately the way to judge a mic is by its sound, and our reviewer was knocked out by the NT1-A's sonic performance. From acoustic guitars to guitar amplifiers to vocals to percussion, the NT1-A excelled in every application for which it was tested, and it handled high-SPL sources



without a problem. Anyone seeking an affordable large-diaphragm condenser for their studio should not fail to listen to the versatile NT1-A.

Monitor Speaker

BLUE SKY

ProDesk 2.1 (\$1,195)

Several monitor systems were in the running in the close-field category, including Alesis's budget-priced ProActive 5.1-surround system.

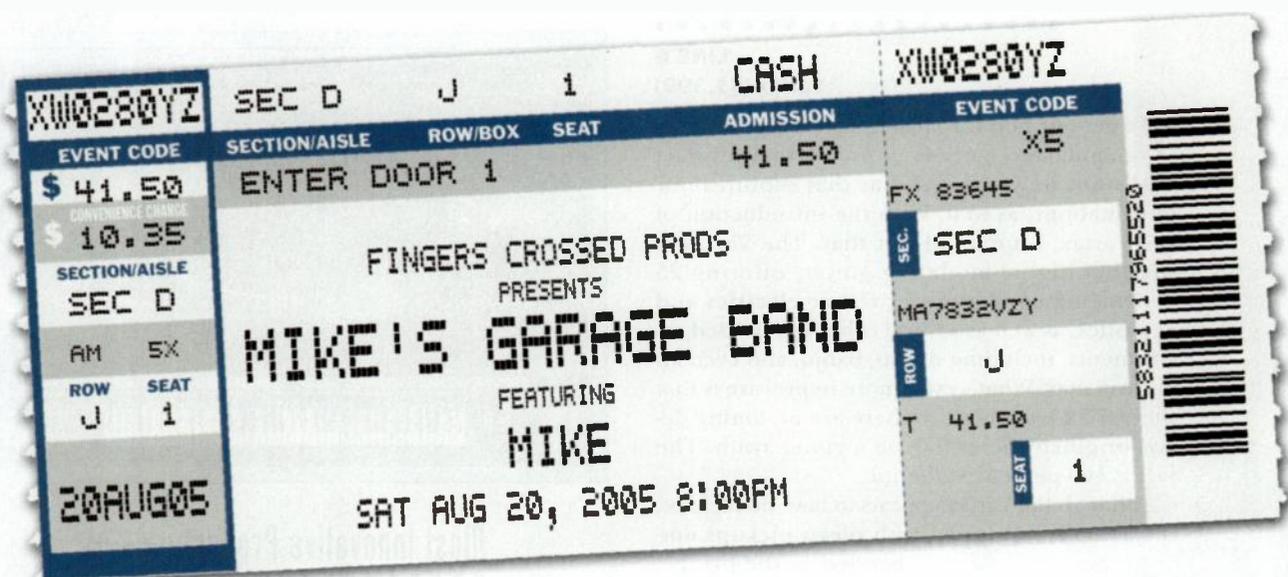


But when pressed to choose an overall winner—and factoring in both price and quality—we gave the nod to Blue Sky's ProDesk 2.1 system.

The ProDesk 2.1 combines a pair of bi-amplified SAT 5 satellite speakers—each featuring a 5½-inch woofer, a ½-inch tweeter, and dual 60W (into 4Ω) power amps—with the SUB 8, a 100W (into 4Ω) powered subwoofer. The crossover is configured so that frequency material above 80 Hz goes to the satellites, while everything in the 20 to 80 Hz range is routed to the sub.

Each SAT 5 speaker is equipped with an input-level control on the rear panel that's calibrated in 3 dB steps. An optional volume-control unit called the Functional Controller (\$100) provides global attenuation for the system, which, as Blue Sky points out, is helpful when using the speakers with DAW systems that lack a master volume control.

Our reviewer found that the ProDesk 2.1 offered tight bass response, very good transient response, and a wide sound field. He noted that the subwoofer is "able to reproduce the bone-rattling frequencies below 30 Hz at a very respectable level without breaking up or sounding strained." Another important observation was that the system's sound remained consistent at different volume levels, an attribute that facilitates accurate mixing.



On lead synth...Mike. On lead guitar...Mike.
 On drums, horns, organ...Mike, Mike, Mike.
 Introducing the Casio WK-3500 with built-in



drawbar organ and 790 on-board tones backed up by a full library of effects and rhythms. Casio's Internet Data Expansion System lets you download free data for Techno, Latin and other sounds at www.music.casio.com. Transfer your libraries easily via SmartMedia, floppy disc, or a MIDI-PC connection. The WK-3500 is one of five new advanced portable keyboards from Casio, all designed to help you create music without limits. So go ahead. Dare to dream.

See www.casio.com for full line of keyboards.

CASIO
 the unexpected **extra**

We were pleased that Blue Sky—a manufacturer known for its pro-audio products—was able to produce a system priced for the personal-studio market that maintained the company's accustomed level of quality.

Most Innovative Product (hardware)

LINE 6
Variax (\$1,399)

To get our nod for most innovative product, a manufacturer needs to put forth a product that's not only original, but that captures our imaginations, as well. With the introduction of the Variax, Line 6 did just that. The Variax is the first digital-modeling guitar, offering 25 convincing emulations of classic electrics and acoustics, as well as several other specialized instruments, including dobro, banjo, and even an electric sitar. What's even more impressive is that the Variax *is* a guitar, so there are no timing delays or glitchy notes like on a guitar synth. The feel is 100 percent authentic.

Although the Variax appears to have no pickups, it's actually equipped with piezo pickups embedded in the bridge.

These translate the vibrations for each individual string into electrical signals, which are then routed separately into the guitar's onboard digital processor, where the modeling algorithms are brought to bear. The user chooses sounds using a combination of the Model Select knob and the Strat-style, five-position pickup-selector switch. For some of the modeled guitars (such as the '59 Strat models), that switch functions identically to the one on the original guitar.

Among the other vintage guitars modeled by the Variax are a '60 Fender Telecaster Custom, a '58 Gibson Les Paul Standard, a '61 Gibson ES-335, a '56 Gretsch Silver Jet, a '68 Rickenbacker 360-12 12-string, and a '59 Martin D28. Although the Variax would likely come in second in a



head-to-head comparison with any of these instruments, it nails the essence of their tones (in almost every case) very convincingly.

The Variax is a bonanza for recording guitarists, delivering an instant arsenal of classic tones for the price of a single instrument. For that feat alone, Line 6 deserves an award.



Most Innovative Product (software)

VIRSYN
Cube 1.01 (Mac/Win, \$249)

As you might imagine, we see a lot of cool software at EM. But every once in a while, something really stands out that gets our total attention. Such is the case with this year's most innovative software, VirSyn's Cube additive synthesizer.

If you're not up on Fourier's theories of sound, we'll summarize by saying that all complex sounds can be broken down into sine-wave components. So if you were given, say, hundreds of sine-wave oscillators to work with, you could, in theory, create any sound from scratch. That's the basic idea with Cube, and it makes the process as easy as we've ever seen.

Cube's interface provides an editing window for each of the four "sound sources" that make up a patch. Rather than have you control the amplitude and frequency of every individual partial, which can be tedious and futile work, Cube combines the upper harmonics into groups for easy manipulation (higher partials are grouped in ever-larger sets). You can draw envelopes for a variety of parameters while a sound plays, and the sound will update in real time; you can also map MIDI controllers to nearly any of the numerous parameters of a patch.

Though the partials of a Cube sound are harmonic by default, a unique Stretch feature lets you change the ratios of the partials to the fundamental. This opens up a vast realm of non-pitched timbres. And working with the Filter

LYLE MAYS AND THE
TRITON
STUDIO:
"HEAD & SHOULDERS
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Lyle Mays is a musical innovator. For over two decades he's crafted a sound that's a brilliant balance of experimentation, improvisation and dynamic composition. Recently, when it came time to purchase a new music workstation, Lyle discovered that "...the TRITON STUDIO stood out head and shoulders above the rest." For Lyle the TRITON STUDIO is the perfect instrument. Whether he's jamming, composing or musically exploring new frontiers, Lyle Mays knows that the TRITON STUDIO has what it takes to ascend to new heights.

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parameter, which can be varied over time, adds yet another significant domain for sonic explorations.

Cube runs both standalone and as a VST plugin and is 8-part multitimbral. Though the manual is not as comprehensive as it might be, that's a minor quibble—because it's incredibly easy to get amazing sounds from this unique software synth.



Preamp (mic/instrument)

FMR AUDIO

RNP8380 Really Nice Preamp (\$499)

Although tube warmth is still in vogue in some circles, many recordists simply want as clean and transparent a preamp as can be had for as little money as possible. This year, two preamps knocked us out with their excellent sound quality. Coming in a close second was the Grace Design Lunatec V3, an outstanding 2-channel preamp and A/D converter designed for field use and costing \$1,695. However, in terms of sound *and* price, the clear winner was the FMR Audio RNP8380 Really Nice Preamp.

With a strictly utilitarian look and feature set, the diminutive RNP8030 offers two channels of high-quality, Class-A amplification in a portable, 1/2U box. The I/O consists of two rear-panel mic inputs, a pair of front-panel instrument inputs, and two balanced 1/4-inch outputs. Remarkably, the RNP8030 includes a rear-panel insert for each channel, so you can add an outboard processor (such as FMR Audio's great-sounding 2-channel RNC1773 Really Nice Compressor) into the signal path. An independent phase-reverse switch, a +48V phantom-power switch, and a gain display are included for each channel.

The RNP8030 provides a respectable 66 dB of gain, for a maximum output of +28 dBu. The stepped gain controls offer 6 dB per step, making it easy to match levels between channels.

Most important, the RNP8030 sounds great. Every EM editor who has used it has been impressed by its balanced low end,

its high-end clarity, and its resolution, even when comparing it to preamps costing twice as much. Whether for a mobile-recording rig or for studio use, we think the RNP8030 is an excellent choice for a preamp in terms of price and performance.

Sample Libraries

VIENNA SYMPHONIC LIBRARY

Vienna Symphonic Library Pro Edition
(Giga, \$5,490)

Sample users were treated this year to several outstanding libraries, including Big Fish Audio's *John Cage Prepared Piano*, Dan Dean's *Brass Ensembles*, and Sonic Implants' *Symphonic String Collection*. But the Vienna Symphonic Library generated the most enthusiasm for its attention to detail and its ambitious scope.

Several of the editors were especially pleased by this library's sound quality, and everyone agreed that it was an impressive undertaking. The Pro Edition of the library consists of 380,000 samples, producing 240 GB of data. The original 24-bit, 96 kHz recordings were made on a specially constructed, ultraquiet recording stage near Vienna that was specifically optimized for sampling sessions.

The mammoth collection of multisamples includes a full range of ensemble and solo strings, brass, woodwinds, and a large (31 GB) percussion section. Several unusual instruments, such as contrabass trombone, Wagner tuba, and glass harmonica, are included in the collection along with a diverse assortment of exotic percussion instruments from brake disc and car horn to finger bells and Peking Opera gong.

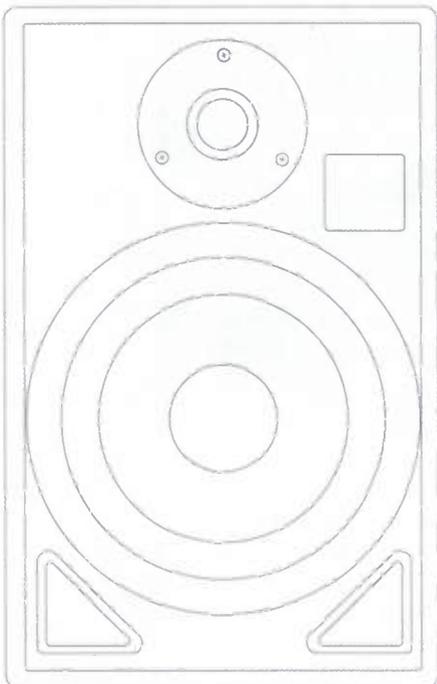
When we examined the Vienna Symphonic's string section in May, we found that it compared well to the best of the high-end string libraries. Its many articulations and bowing techniques—from *détaché* and *spiccato* to tremolos and *glissandi*—offer desktop orchestrators the means to create lifelike string-ensemble parts. Moreover, Vienna Symphonic Library includes a powerful suite of performance utilities that adds real-time expressiveness and more authenticity to many of



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Years of professional use will take its toll on even the most durable transducer. Many of the most popular monitors over the last ten years are no longer in production and in some cases, it's impossible to get replacement parts. The fact is, your old standard is running out of gas. With the new KRK ST Series you'll be able to keep your amplifier investment and make a significant upgrade to your monitoring system.

The KRK ST Series is an all-new design that incorporates the latest in driver and crossover technology. The net result is a passive monitor that delivers the precision that professionals demand at an affordable price. The KRK ST Series — the new standard in passive near-field monitors.

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the patches. True legato passages (with note-transition samples), convincing repetitions (in every instrument category), and user-definable alternation patterns are available to enhance the library's sense of realism.

Vienna Symphonic Library's sheer size, great sound quality, thoughtful organization, future expandability, and high-end features make it a sample collection that's hard to beat.



Sample Player (software)

STEINBERG

Groove Agent (Mac/Win, \$249.99)

This year we had several intriguing sample-player programs to consider for an award, but we were finally won over by Groove Agent's unbeatable combination of versatility and user-friendliness. Groove Agent is Steinberg's cross-platform drum-machine-on-steroids VSTi plug-in, and when we looked beyond its cleverly designed "front panel," we discovered an amazing array of rhythm-producing capabilities.

Unlike prefab drum-loop libraries, Groove Agent generates its patterns by triggering individual 24-bit drum samples from its own internal MIDI tracks. The well-recorded playing is nicely performed, and best of all, you can easily change the tempo, substitute individual drum sounds, retune instruments, or change the volume of sounds in real time. Love a particular drum pattern but hate the snare? Just swap it out! You can even replace individual sounds by triggering samples from external devices or record a whole Groove Agent rhythm track into your MIDI sequencer for further editing. It's not only entertaining, it's surprisingly powerful.

Groove Agent's Timeline slider lets you choose from more than 50 wide-ranging musical styles listed chronologically from the 1950s to the present. The plug-in offers four different drum kits along with several percussion instruments and electronic drum sounds. Once you've selected a

style and tempo, the fun really begins. You can choose from 25 variations arranged in order of increasing complexity or insert any of 25 fills for that style. You can also apply a compressor or reverb to your track and use the Shuffle and Humanize controls to change the feel. With Groove Agent's four outputs, you can even add effects to individual drum sounds.

For nonpercussionists, this virtual drummer offers an easy way to lay down a solid rhythm track in almost any style. And songwriters will love how Groove Agent can crumble a bad case of writer's block. Song's not working as a bossa nova? Try salsa or reggae or cha-cha or disco or swing. Musical styles, good all-around quality, versatility, features, affordability, and ease of use—you can't beat that with a stick!

Sampler (software)

MARK OF THE UNICORN

MachFive (Mac, \$395)

During the past five years we've seen an exciting parade of software samplers enter the marketplace, but more often than not these virtual instruments have offered limited support for different formats and platforms. Not so with MOTU's powerful new MachFive.

This "universal" sampler plug-in includes a utility that lets you import, audition, and load sound banks in a long list of sampler formats, including Akai, Roland, E-mu, Kurzweil, SampleCell, EXS24, and Giga. With MachFive you can insert discs and import samples directly from CDs, even if your computer ordinarily wouldn't recognize the disc formats. Finally, a new sampler that



doesn't make your old libraries obsolete! And that's not all: MachFive can also import samples in WAV, Acid, AIFF, SDII, and REX formats. It comes with a 4 GB library of high-quality samples and supports simple drag-and-drop file importing and keymapping.

We naturally expected MachFive to support

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Vol. 1

V-TONE GUITAR PACK

- Everything you need to play electric guitar
- Electric guitar featuring a 22" fret maple neck, solid body, sealed chrome machine heads, three single-coil pickups, five way switching and vintage vibrato bridge
- V-TONE GM108 15-Watt modeling amplifier with 27 classic guitar amp sound presets, 8" guitar speaker, headphone output and CD input
- High-quality instrument cable, adjustable guitar strap, 3 picks, padded gig bag, guitar instruction book and amp manual



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HPM1000

- Multi-purpose headphones
- Ultra-wide frequency response 20 Hz - 20 kHz
- High dynamic range
- High-resolution capsule
- Single-sided cord
- Over-ear shield ear cups
- Comfortable headband
- Sensitivity 105 dB @ 1 kHz
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TUBE ULTRAGAIN MIC100

- High-tube mic/line preamplifier for studio, live and hard disk recording applications
- Hand-selected 12AX7 vacuum tube, dynamic limiter, phase reverse switch, +48V phantom power and 20 dB pad for utmost flexibility
- The ultimate sound-enhancing tool for virtually any sound source
- Perfectly complements studio-grade condenser mics and all other mic types



US\$ 39.99*

EURORACK UB1204FX-PRO

- Ultra low-noise design 12-input 2/2-bus mic/line mixer with premium IMP "Invisible" Mic Preamps and 24-bit multi-FX processor
- Phantom power, 2 subgroups, 2 aux sends and 2 stereo aux returns
- 3-band EQs on all mono and stereo channels (low cut on mono channels)
- Rack-mounting kit included



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MICROPHONE XM1800S

- Excellent vocal/instrumental dynamic microphone
- Presence lift in critical mid-range gives you maximum voice projection
- Cardoid characteristic with excellent feedback suppression
- Sturdy, reliable metal construction
- Balanced low-noise XLR output
- Two-stage pop filter
- Practical On/Off switch
- 3 pcs. delivered in a rugged hard case with mic clip and stand adapter



US\$ 29.99* (3 pcs.)

V-TONE GM108

- True analog modeling 15-Watt guitar amp with original vintage design guitar speaker
- Authentic Analog Modeling for 3 classic guitar amps, 3 amplifier simulation models plus 3 gain modes—providing you with 27 classic sound presets
- Wide-range drive control, 3-band EQ, CD input and powerful headphone output with speaker simulation
- Noise gate with automatic and manual parameter adjustments



US\$ 49.99*

EURORACK MX81002

- 10-channel mixing console with optional battery operation
- 2 mono channels with IMP "Invisible" Mic Preamps and inserts, 3 stereo channels with IMPs plus phantom power on all channels
- Dedicated tape/return channel
- Separate gain controls for mic and line inputs on stereo channels allow both inputs to be active



US\$ 99.99*

ULTRABASS PRO EX1800

- Professional sub-harmonics processor for super-low bass sounds
- The perfect tool for PA, clubs, cinemas, sports/theater studios or your home stereo system
- Digital synthesis based on waveform analysis generates ultra-low frequencies
- Dynamic punch control adds breathtaking "kick bass" to your program material
- Bass mode control allows you to fade between "ultra-low" and "punchy" bass sounds



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SHARK DSP110

- Automatic Feedback Destroyer and multifunction signal processor
- Discrete ultra low-noise mic/line input stage with gain control and +48V phantom power
- Super-musical compressor with variable density
- Delay line with up to 2.5 seconds of delay, adjustable in meters, feet and msec



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DDX3216 HOT SHOT

Fully Automated 32-Channel 16-Bus Digital Mixing Console

- 32 full-fledged channels/12 ultra low-noise IMP "Invisible" Mic Preamps
- 16 busses, 8 aux sends and comprehensive routing options
- Fully featured dynamic and snapshot automation
- 17 ultra-precise, low-noise 100-mm motorized ALPS® faders
- Compressor/limiter plus gate, 4-band parametric EQ, sweepable high pass and phase reverse on all 32 channels, additional delay on channels 1-16
- Additional compressor/limiter (switchable pre/post) and EQ for stereo main mix
- Four simultaneously operable effects processors with dozens of first-class algorithms, accessible from all 32 channels



ULTRAGAIN PRO-8 DIGITAL ADA8000

- Ultra high quality 8-channel 24-bit A/D & D/A converters for virtually any digital recording/mixing environment
- 8 low noise all-in-one, studio-grade IMP "Invisible" Mic Preamps
- Phantom power on all mic inputs
- The perfect expansion for the DDX3216
- Processes 44.1 and 48 kHz sample rates



US\$ 999.99* (with options: ADT1616: 16-Channel ADAT® interface for DDX3216 • TDF1616: 16-Channel TDF interface for DDX3216 • AES80B/ACB80BP: 8-Channel AES/EBU interface for DDX3216/19" Connector Box)

EUROPOWER PMX2000

- 2 x 250-Watt 10 channel power mixer with 24-bit multi-FX processor
- 6 mono channels with IMP "Invisible" Mic Preamps and phantom power plus 4 stereo channels (3 with IMPs)
- 3-band EQ on all channels
- 9-band stereo graphic EQ allows precise frequency correction
- Optional stereo (main LR) or double mono (main/monitor) operation possible
- Professional SPEAKON® connectors



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BASS V-AMP

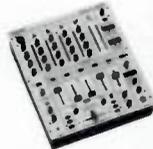
- The ultimate tone toolbox for bass/acoustic/electric guitar and keyboard amp modeling
- 32 amp models, 23 speaker cabinet simulations, noise reduction etc.
- 16 analog and digital multi-effects including ultrabass synth, delay/loop sampler, chorus, flanger, rotary speaker, voco box, wah etc.
- Stereo aux input, extensive MIDI implementation
- 4 renowned distortion and overdrive stomp boxes



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PRO MIXER DJX700

- Professional 5 channel DJ mixer with digital effects and BPM counter
- 4 dual input stereo channels, 1 ultra low-noise microphone channel with "On Air" switch
- 47 breathtaking digital effect presets in 24-bit quality delay, reverb, flanger, filter, vibrato etc.
- Awesome adjustable XPD stereo surround effect
- Super-smooth VCA ULTRAGLIDE faders with up to 500,000 life cycles



US\$ 199.99*

BLUE DEVIL GX112

- 60-Watt RMS VIRTUBE guitar amp
- Original JENSEN® 70 Watt 12" speaker
- Two channels with separate volume and FX settings
- Stereo 24-bit multi-effects processor with 99 user presets
- 31 original VIRTUALIZER/MODULIZER presets with world-class effects
- Channel select/FX bypass footswitch included



US\$ 199.99*

ULTRABASS BX3000T

- 300-Watt bass amplifier with DYNAMIZER technology for ultimate punch
- Switchable ULTRABASS sub-harmonics processor & revolutionary "Shape" filter
- Extremely musical 5-band EQ with "Bright" and "Deep" functions
- Vintage-style VU meter
- Dual footswitch included
- Balanced XLR DI output, effects loop with tuner function and line output
- 3 speaker outputs on 1/4" jack and SPEAKON® connectors



US\$ 199.99*

ULTRA-Q PRO PED200

- Ultra-musical and low-noise 5-band parametric equalizer
- Precision state variable filters with constant-Q characteristic
- Parallel filter architecture ensures minimal phase shifting
- Sweepable high- and low-cut filters remove unwanted frequencies
- Each band bypassable
- and fully adjustable from notch filter to broadband equalization
- Broad frequency band overlapping allows extreme boost/attenuation



US\$ 79.99*

EUR-LIVE F1220

- High-power 2-way floor monitor
- 400 Watts program
- Titanium HF driver for brilliant, natural high-frequency reproduction
- BEHRINGER HF driver protection
- Professional SPEAKON® connectors
- Ultra-rugged enclosure with two angles (30° and 60°)
- Rugged steel grille for optimal speaker protection



US\$ 159.99*

B300

- Fully active 2-way 300 Watts PA loudspeaker
- High-power 15" woofer and 1 1/4" HF driver
- Suitable as main PA and floor monitor
- Two high-power amps delivering a total of 300 Watts
- Integrated limiters ensure speaker protection
- Additional ultra low-noise mic input and 2-band EQ
- Integrated suspension points and socket for pole or stand mounting
- Extremely rugged, low-resonance plastic enclosure



US\$ 369.99*

EUROPOWER EP2500

- High and power amp with all protection modes
- 2 x 1,200 Watts in 2 Ohm/2,400 Watts in 4 Ohm bridged operation
- 2-channel, parallel or bridged mono operating modes for flexible application
- Independent limiters for each channel offer dependable protection against distortion
- Precise signal and clip LED indicators to monitor performance



US\$ 349.99*

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The success of BEHRINGER is the result of a partnership with YOU, our customer. Over the past 15 years, we've always listened to your suggestions, which ultimately helped us design some of the most successful products in the industry. The huge demand

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MOTU's native MAS plug-in format, but we were floored to learn that it also supports VST, RTAS, HTDM, Audio Units, and (by the time you read this) DXi, allowing you to move easily from one platform to another. What's more, MachFive supports high-definition 24-bit, 192 kHz audio and accepts samples in channel formats from mono to 5.1 surround, offering incredible sound quality in any studio configuration.

MachFive is also a full-featured all-in-one sound design environment. The user interface offers direct access to most editing features, including a multichannel waveform editor, a spectrum analyzer, a built-in tuner with graphical display, and LFO settings and routings. MachFive can even have up to 136 separate effects going at once, and of course, you can sync the LFOs and effects parameters to the sequence tempo.

MachFive is clearly a powerful and versatile sampler, but its straightforward user interface and well-designed sound-bank management features keep it relatively easy to use. Add to that its new direct-from-disk sample-streaming capability, and MachFive is unquestionably a winner.

Signal-Processing Software (bundle)

INA-GRM

GRM Tools ST 2.0 (Mac/Win, \$549)

Of the numerous signal-processing bundles available, few match GRM Tools ST in terms of innovation and sound quality. GRM Tools ST (which stands for Spectral Transform) includes four FFT-based real-time effects—Contrast, Equalize, Freq Warp, and Shift—that offer familiar processing chores enhanced by a powerful feature set.

To take one plug-in as an example, Contrast is a compressor/expander plug-in that divides the components of an audio signal into three classes according to strength: strong, average, and weak. Once divided, you can adjust the relative levels of the signals. This allows you to, for instance, reverse the spectral characteristics of a sound by emphasizing the weakest signals and suppressing the strongest. Imagine the possibilities this has for processing a loop, let alone mastering a CD!

The other plug-ins in the bundle are equally powerful. Equalize is a 31-band graphic EQ divided into one-third-octave bands, each with a cut/boost range from -96 dB to +12 dB. Freq Warp uses an x-y transfer function to remap the frequency content of a signal. Shift is a frequency shifter that also does scalable transposition. Each plug-in is surprisingly simple to use, thanks to a well-designed, intuitive interface, and the overall sound quality is superb. The plug-ins are available in VST, RTAS, HTDM, and AudioSuite formats.



Like the older GRM Tools plug-ins, the GRM Tools ST plug-ins include the SuperSlider function, which lets you manually interpolate between a handful of user-defined presets. You also can automatically move between any of the 16 presets at a user-specified time interval. To top it off, a pair of randomizing presets is present in each plug-in, allowing you to inject some juice into a dull session. Whether you want to subtly tweak a mix or completely obliterate a vocal part, the GRM Tools ST bundle makes it fun and easy.

Signal-Processing Software (individual)

NATIVE INSTRUMENTS

Vokator (Mac OS X/Win, \$299)

Vocoders are all the rage these days, and this year's winner for individual signal-processing software, *Vokator*, has the features you'll need to walk the walk and—more to the point—talk the talk. *Vokator* has a number of routing options:



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PRESENTS

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MINIMUM SYSTEM REQUIREMENTS

- 1 GHz Processor
- 512 MB of RAM (preferably 768 MB or more)
- DVD drive (for installation)
- Windows 2000 or XP or MacOSX
- 9 GB of free hard disk space



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for example, you can cross a sound coming from your audio interface in real time with a file on your hard drive or use a prerecorded sound file in conjunction with a number of static waveforms. A variety of sound-design tools enhance your vocoding pleasure, including a compressor, an arpeggiator, a morphing filter, and envelope presets. Presets can be stored and used independent of the files in which they were created, and a number of presets from Native Instruments' Spektral Delay are included.

Vokator includes other signature features from the Native Instruments lineup, such as the granular sampler found in Reaktor. It also offers a range of modulation sources for patch parameters, including a step sequencer, LFOs, and envelope followers. The powerful Group Mode provides two sets of up to 32 frequency bands for re-creating classic vocoder effects, and a very efficient real-time analysis engine keeps data flowing through the program.

Although we wish the interface were more modular—it would be great if you could hide individual work areas you weren't using, for example—the range and quality of the sounds you can get are really quite astounding. We'd be hard-pressed to find anything more worthy of the title "vocoder workstation" than this year's winning signal-processing software.

Signal Processor (hardware)

.....
SPL
Transient Designer 4 (\$1,299)

Synthesists have long had the ability to change the attack and sustain of a sound using envelopes. However, doing this with nonsynthesized instruments is more difficult and requires the patient programming of gates, compressors, and limiters. Enter the SPL Transient Designer 4, a 4-channel device that sculpts the attack and release characteristics of a signal in ways heretofore impossible with a single device.

The Transient Designer 4 uses SPL's proprietary Differential Envelope Technology to produce two distinct envelopes for the attack portion of a sound and two for the sustain portion. These envelope pairs are used to create a difference signal that controls a VCA. The result gives you the ability to shape transient characteristics with only two controls for each channel: Attack and Sustain. Link switches are provided for slaving one set of controls to another.

The Attack control allows you to boost or attenuate the attack part of a signal by 15 dB, and the Sustain control gives you 24 dB of cut or boost. With only two controls—note that there is no threshold or ratio control—it's easy to dial in the right sound every time. And the Transient Designer 4 lets you go from subtle to extreme processing in no time. Need to make a staccato guitar line more legato or vice versa? You've come to the right place.

Our reviewer noted that the Transient Designer 4 was one of the most revolutionary products he has ever worked with, and he gave it top marks for audio quality and value. When an endorsement like that comes from a veteran engineer, we can't help but take notice.



Synthesizer (keyboard, analog)

.....
MOOG MUSIC
Minimoog Voyager (\$2,995)

The Minimoog Model D was the first portable synthesizer, and its sound has endured like that of no other instrument in the electronic arsenal. Now its inventor has given us an analog monosynth for the 21st century: the Minimoog Voyager. The Voyager has everything its predecessor offered and more, such as three VCOs, a fat 4-pole filter, and a 44-note keyboard, all housed in a real wooden cabinet that's a joy to behold. New features include programmable memory, Velocity sensitivity, plenty of control-voltage inputs, and all the advantages that MIDI can offer.

Like the Model D, the Voyager is hand-built and solid as a tree. It even looks like a Minimoog; the knobs and switches are the same as they were in 1971. The tilt-up control panel affords the same ease of use, and most of the controls are just where they've always been. But the Voyager is no mere copy; technological innovations give it an expressivity and versatility that yesterday's Minimoog couldn't touch.



K2661 Evolution of a Species



Kurzweil's newest member of the K2600 family is more powerful than ever. The K2661 truly has it all: Kurzweil's award-winning V.A.S.T. synthesis, mind-blowing effects, KB3 Organ Mode, Live Mode, and Triple Modular processing are joined by exciting new features including built-in 8-channel ADAT I/O, a SmartMedia™ card slot for storing patches and samples, 24-bit D/A, and General MIDI mode. Program memory expansion and 128MB of sample RAM* are also included as standard. All in a very portable, 61-note, synth-action keyboard. Now, you can take it with you!

And of course, the K2661 sounds amazing. With the Orchestral and Contemporary ROM options built-in, the K2661 features the new "Best of V.A.S.T." sound set, which is also available for download for K2600 users. The Stereo Dynamic Piano and Vintage Electric Pianos ROM options are available for both K2661 and K2600 users. The optional sampling card is also available.

The new K2661 - a highly evolved instrument, limitless in sonic potential, control, and musicality. Better for your music, and better for your back. You bring your craft, your ideals, your heart and soul. We bring you the K2661. Your vision will be realized.

* Note: Sample RAM is standard with models sold in the USA only.

K2661 Features

- 61 note synth action keyboard
- ADAT 8-channel I/O ports
- 24-bit D/A
- SmartMedia™ card slot
- V.A.S.T.™ synthesis
- Triple Modular Mode™
- KB3 Mode™
- KDFX™ processing
- Vocoder
- Orchestral & Contemporary ROM
- General MIDI ROM
- 128 MB of sample RAM*
- Expanded P-RAM (1.5MB)
- Extensive sample processing capabilities
- Live Mode
- 32 track sequencer with editing
- RAM Tracks
- 48 note polyphony, 192 oscillators
- Full MIDI controller capabilities
- SCSI Port
- 39.4" x 14.2" x 4.3" and only 36 lbs.

KURZWEIL



KME61



Rumour



PC1x



KSP8



PC2x



Mangler



K2600XS

Most noticeable is the Touch Surface Controller, a large 3-axis pad that responds to your fingertips so you can simultaneously control filter cutoff, envelope times, and LFO rate, or any three real-time parameters you choose. With its continuously variable waveforms, stereo multimode filtering, new modulation routings, and lots of other up-to-date features, the Voyager fulfills the needs of the modern synthesist.

And the sound? It's a Moog, all right: all those classic timbres are yours to command at the touch of a button, from famous basses to screaming solos. If the job calls for a monophonic analog synth, you might have other choices, but we suggest you try this one.

Synthesizer (keyboard, digital)



HARTMANN
 Neuron (\$4,995)

Once in a great while, a musical instrument comes along that takes a successful new approach, as the Mellotron, the Moog Minimoog, the Sequential Prophet-VS, and the E-mu Emulator each did in its day. Such instruments change the way that sound is produced, and hence, the way musicians work. A fine example is the Hartmann Neuron, brainchild of Waldorf Q developer Axel Hartmann and Prosoniq developer Stephan Sprenger. You can tell the Neuron is different just by looking at it: its real-time controllers include 5 joysticks, 13 backlit LCDs,

and 14 thumbwheels with LED ladder displays. Analog and digital connections are all grouped on the side panel, and all the parameters change names when you change programs.

But appearance isn't what makes the Neuron extraordinary. Its architecture and sound are new and different, allowing you to directly manipulate the building blocks of physical modeling. You begin with samples that are resynthesized and then classified from a list of Models. Models



might be anything from bowed strings and electric pianos to different types of weather. The selection of parameters depends on the selected Model, and the front-panel controls are reconfigured for each Model. A joystick that previously controlled string tension might now control room size or temperature.

Mastering the Neuron means learning a new approach to audio synthesis. Instead of working with simple oscillators and filters, you enter a world of Resynators, Scapes, Spheres, and Silver. The Neuron makes morphing from one sound to another effortless, and the results can

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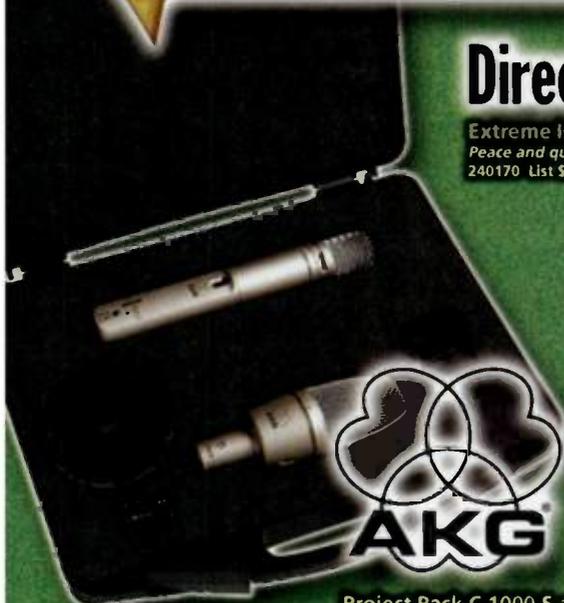
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be satisfyingly musical. You can sample and resynthesize your own sounds, and ModelMaker software is included for those who want to create their own models. Tired of the same old sounds? The Hartmann Neuron is a breath of fresh air.

Synthesizer (module)

DAVE SMITH INSTRUMENTS
 Evolver (\$499)

Last year, a master synth builder returned to his roots making hardware-based instruments. Dave Smith—whose accomplishments include the first programmable polysynth, the first popular soft synth, and an idea that grew to become MIDI—introduced the Evolver, a small tabletop MIDI module. The Evolver combines real analog and digital oscillators and filters, an analog-style



sequencer, a matrix-style user interface, and the ability to process external audio to create sounds that no other instrument can. What makes the Evolver all the more amazing is that its retail price is less than half a grand.

The Evolver's specialty is generating sounds that evolve over time, from staccato sequences to slowly churning drones. Its sequencer, LFOs, and modulation routings are designed to produce sounds that are always in motion. Every step in a sequence can sound very different from the previous step. Like any great synth, the Evolver also provides enough hands-on control that human interaction can always be part of the sound-generation equation.

The Evolver's synthesis architecture is unique, but its functional components and signal flow are familiar territory. Despite its small size, the Evolver has four audio oscillators, two filters, three EGs, four LFOs, an envelope follower, and remarkably sophisticated modulation routings. It's a monosynth, but its output is stereo, and it makes the most of stereo imaging. Its cleverly designed sequencer lets you program a monophonic synth to play four-part chords. Four 16-step sequences can run concurrently, with each sequence assigned to a different oscillator or modulation source.

The Evolver is also a dandy processor for electric guitars and other external sources. Its effects capabilities include a surprisingly versatile

THE AWARD WINNERS IN REVIEW

Almost all of our award winners have been reviewed in our pages or soon will be. The reviews still in progress should be published in the next two issues, though one or two might be published a bit later.

Quotation marks enclosing an article title indicate that the product was not covered in a review but elsewhere in the magazine. All other entries indicate reviews of the award-winning version.

All published articles are available for download from the EM article archives at www.emusician.com except the Line 6 Variax review, which is available at www.onstagemag.com.

Arturia Moog Modular V 1.1	January 2004
Audio Engineering Associates R84	October 2003
Blue Sky ProDesk 2.1	November 2003
Dave Smith Instruments Evolver	June 2003
Devine Machine Software Devine Machine 1.0 ...	December 2003
Digidesign Digi 002	April 2003
and "All Fired Up"	November 2003
FMR RNP8380 Really Nice Preamp	January 2004
FXpansion Audio UK VST to AudioUnit Adapter, "What's New: Download of the Month"	December 2003
Hartmann Neuron, "Seven Deadly Synths"	September 2003
INA-GRM GRM Tools ST 2.0	December 2003
Line 6 Variax	May 2003 <i>Onstage</i>
Little Labs IBP Analog Phase Alignment Tool	July 2003
Magix Samplitude Professional 7.11	January 2004
Moog Music Minimoog Voyager	October 2003
Matt Ingalls MacCsound, "What's New"	September 2003
MOTU 828mkII, "All Fired Up"	November 2003
MOTU Digital Performer 4.1	In progress
MOTU MachFive	In progress
Native Instruments Reaktor 4.03	December 2003
Native Instruments Vokator	November 2003
Røde NT1-A	December 2003
Roland MC-909	September 2003
Roland VariOS	December 2003
SPL Transient Designer 4	October 2003
Steinberg Groove Agent	November 2003
Vienna Symphonic Library, "In Search of the Ultimate String Library"	May 2003
VirSyn Cube 1.01	In progress

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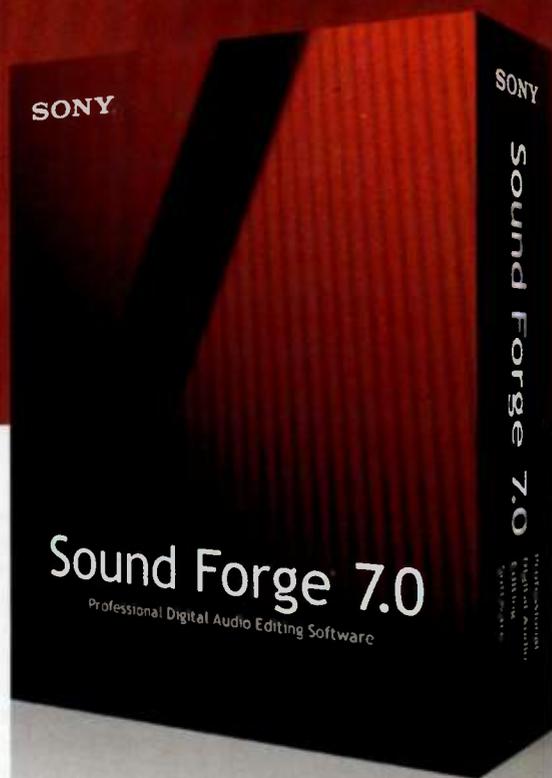
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monophonic delay, envelope-controlled filtering, and several varieties of distortion. The Evolver's effects, in combination with its one-of-a-kind synthesis architecture and real-time control capabilities, ensure a timbral palette that no other instrument can produce.

Synthesizer (software)

ARTURIA

Moog Modular V 1.1 (Mac/Win, \$329)

When French software developer Arturia announced that it had realistically modeled vintage Moog synth modules in a computer program, we were naturally a bit skeptical. After all, Moog modular systems are the epitome of analog sound: fat and thick and capable of satisfying musical nuance. When we saw Moog Modular V, it looked convincing enough: all the knobs and jacks were in the right places and worked as expected. But imagine our delight when we compared its sound to that of a real Moog synth and heard amazing similarities—not perfection, mind you, but a surprisingly close re-creation for a computer program—for a price that's a scant fraction of the price of the real thing.

Moog Modular V offers so many modules that it would take a considerable pile of cash to build a corresponding system with hardware (if built-to-order Moog modules were even available). Because the modules are in a fixed configuration, Moog Modular V is an instrument you can get to know as well as if you owned a real modular synth. Practically anything you could do with the real thing, you can do with the emulation, and sometimes more. In addition to tons of virtual oscillators, VCFs, VCAs, EGs, and LFOs, the software provides a step sequencer, a 14-band filter bank, and an onscreen keyboard. It also offers features a real modular can't, such as hundreds of presets and 64-note polyphony. You can assign MIDI CCs to control every function, and re-assigning virtual patch cords is click-and-drag simple.



Endorsed by Bob Moog himself, Moog Modular V probably comes as close as any software to re-creating complex analog synthesizer hardware, and it does it on a large scale. It runs standalone or as a plug-in for a variety of formats. We applaud Arturia's significant undertaking and technical achievement.



Synthesizer Workstation (software)

NATIVE INSTRUMENTS

Reaktor 4.03 (Mac/Win, \$499)

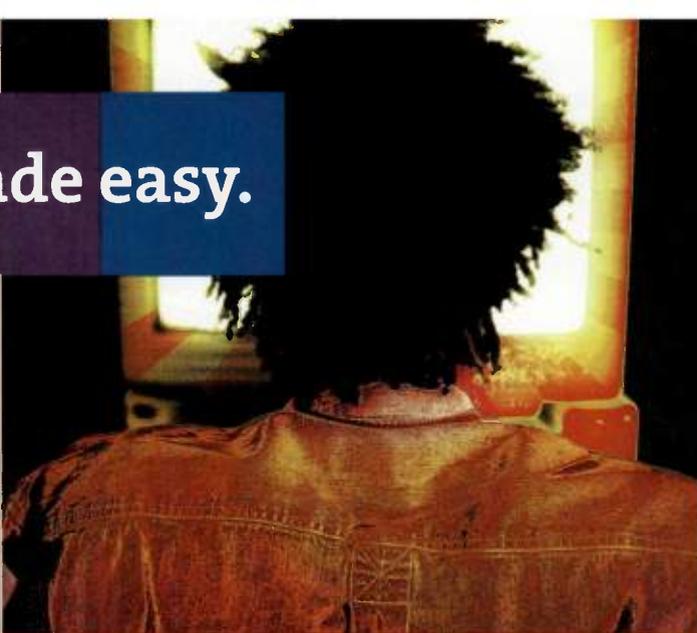
Who hasn't heard of Native Instruments' category-leading Reaktor? But have you seen what the company has added to the 4.0 release? We were knocked out by the number of new features in this already superpowerful program and spent many hours playing the new and rewritten Ensembles that come with this release.

Not only does Reaktor 4 have an updated, more intuitive graphic interface, but you can now add Modules and Macros to your designs by simply dragging them from the new Browser and dropping them onto your workspace. And talk about ease of use: the new Randomize feature in the Snapshot menu lets you create presets automatically or morph between two presets over a user-defined time frame.

Enhanced Modules, such as the new anti-aliasing oscillators, can be found throughout Reaktor's toolkit. If you are a visually oriented person, you'll love the new Multi-Picture Module, which lets you stream images to the screen while a sound plays. We've long wanted a way to edit samples graphically in Reaktor, and in version 4, our wish has been granted. And how can you beat the fact that this huge update, which was two years in the making, was given to registered users free of charge?

The number of user-contributed Ensembles at the Native Instruments Web site—currently over 1,200 and growing daily—tells us that Reaktor is a hugely popular program. It seems that we're not alone in ranking it Best of Show for the past year! ☺

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FW-1884	18-in / 18-out	8 XLR mic ¹ , 8 1/4" TRS (bal.)	YES	8 1/4" TRS (bal.) + headphone	8 1/4" TRS (bal.)	two S/PDIF	24 bit / 96 khz	64 ch.	GigaStudio	9 motorized, touch-sensitive faders ² , Aux, Pan, Phones, Line, Jog, Transport, DAW shortcuts and much, much more	ASIO, WDM, GSIF, Core Audio, MME, Sound Manager ^{3,4}
US-428	4-in / 2-out	2 XLR mic ¹ , 2 1/4" TRS (bal.), 2 1/4" (unbal.)	YES	2 RCA (unbal.) + headphone	N/A	two S/PDIF	24 bit	32 ch.	GigaStudio & Cubasis VST	8 faders ² + stereo master, Aux, Pan, Phones, Line, Jog, Transport, DAW	ASIO, WDM, GSIF, Core Audio, MME, Sound Manager ³
US-224	2-in / 2-out	2 XLR mic ¹ , 2 1/4" TRS (bal./unbal.)	YUP	2 RCA (unbal.) + headphone	N/A	two S/PDIF	24 bit	16 ch.	GigaStudio & Cubasis VST	4 faders ² + stereo master, Phones, Line, Jog and Transport	ASIO, WDM, GSIF, Core Audio, MME, Sound Manager
US-122	2-in / 2-out	2 XLR mic ¹ , 1/4" TRS (bal./unbal.)	YEAH	2 RCA (unbal.) + headphone	two inserts	N/A	24 bit	16 ch.	GigaStudio & Cubasis VST	2 rotary input level controls, Line, Phones, Direct Monitor	ASIO, WDM, GSIF, Core Audio, MME, Sound Manager

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PROFESSIONAL AUDIO



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AmpliTube

IK MULTIMEDIA AmpliTube LE

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SampleTank

IK MULTIMEDIA SampleTank SE

An incredibly easy-to-use sample playback module, SampleTank SE offers a world of sample playback possibilities. Simply open the SampleTank SE plug-in right within the Pro Tools mixer and you've got instant access to a host of professional samples and integrated effects.



IK MULTIMEDIA T-RackS EQ

Pulled from the superb T-RackS mastering plug-in suite, T-RackS EQ is perfect for adding that rich, warm tube sound to your Pro Tools tracks. T-RackS EQ offers six bands of analog-modeled parametric equalization, complete with high- and low-pass filters, all in an easy-to-use interface.



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PRO TOOLS



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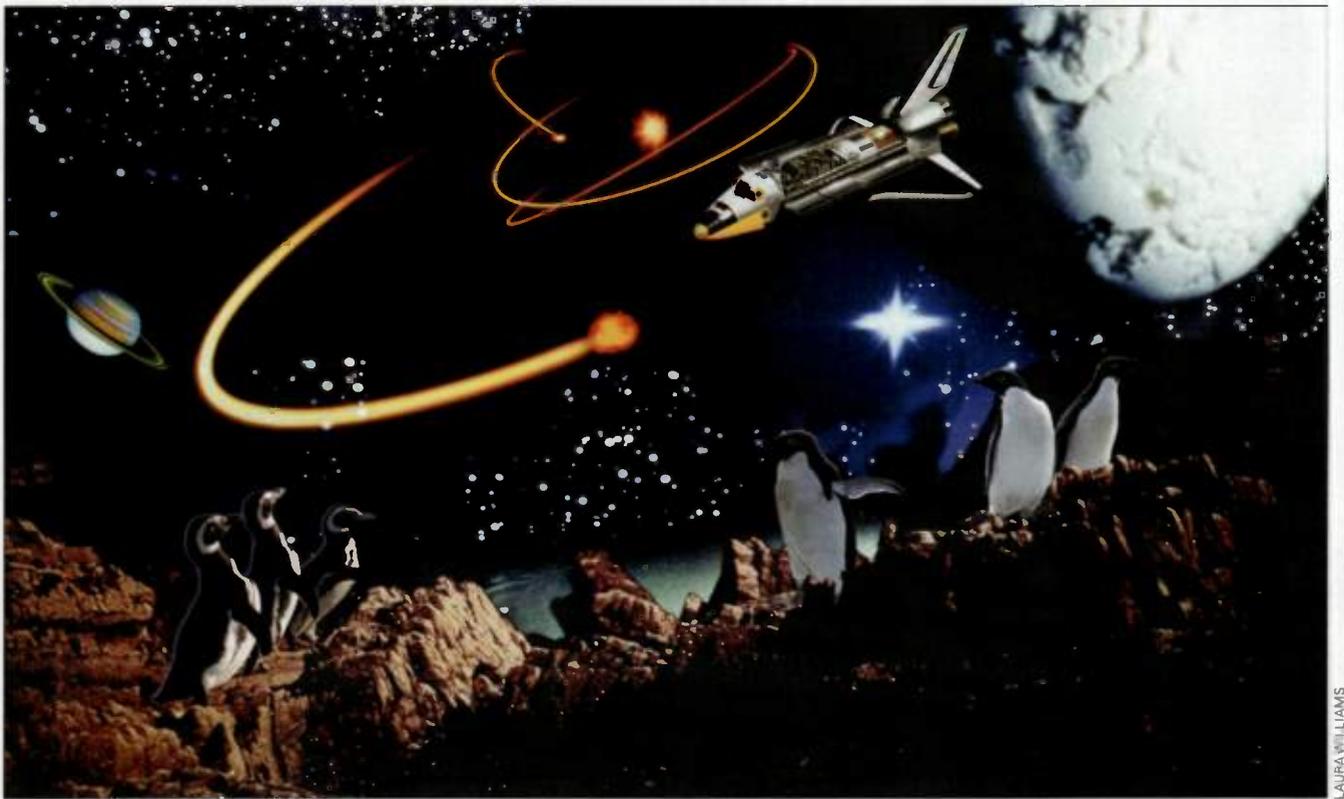
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Planet CCRMA rockets your PC to the world of Linux Audio.

For more than ten years, Linux has been gaining ground as a favorite platform for die-hard techies, power users, and programmers. More recently, Linux has moved into the corporate mainstream, often replacing costly servers based on proprietary technology.

But when you perform a fresh Linux installation, you don't necessarily have a low-latency platform for music and audio production. That's where Planet CCRMA comes in. Assembled by the folks at Stanford University's Center for Computer Research in Music and Acoustics (CCRMA), Planet CCRMA transforms a Linux system into a lean, mean, audio-production machine. And here's the best part: it's free. (For background on how Planet CCRMA came into being, see the sidebar "In the Beginning . . .")

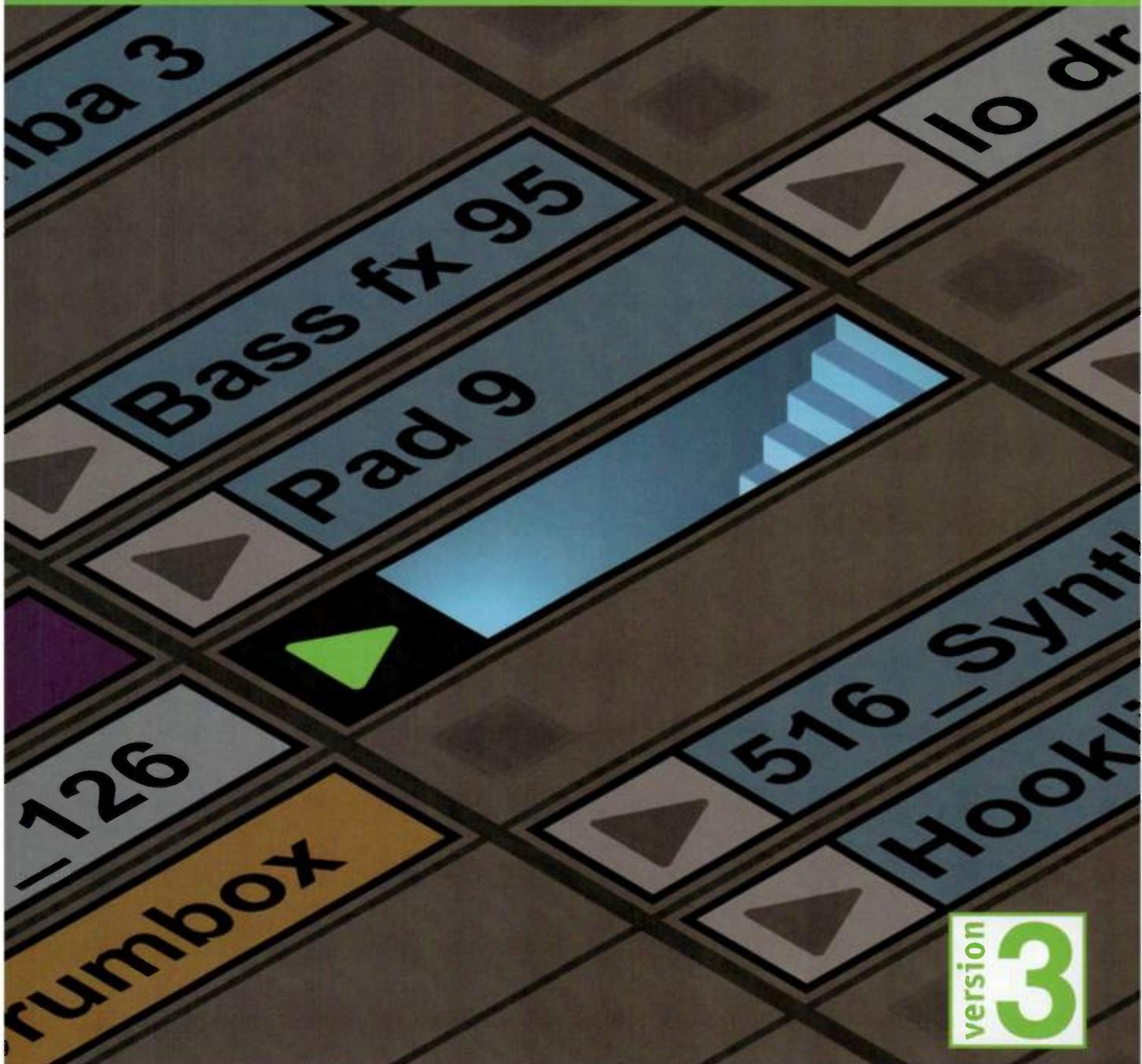
By Allan Metts

WHY LINUX?

With so many excellent applications available on Windows and Mac, why would anyone even bother with Linux? For starters, command-line programs are still in favor on Linux, and there are times when a fancy GUI just isn't appropriate. For example, you may need to process audio behind the scenes in an amusement-park attraction or in a handheld device for the field. Linux has been known to fit in very small footprints.

Command-line programs are highly conducive to automation, and Linux includes plenty of automation tools. In a matter of minutes, you can write a "script" to identify all of your WAV and AIFF files, resample them to 48 kHz, add half a second of silence, and store them on a file server. If you want this to happen every night at midnight, it can.

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Sounds from Another Planet

Linux applications, whether GUI-based or command-line driven, make no assumptions about where your keyboard, mouse, and monitor are. If you want, you can stick five PCs in a rack, connected with nothing more than power cords and Ethernet cables. You'll be able to run applications on all of these machines simultaneously, using a keyboard, mouse, and monitor attached to any Linux machine. What's more, the GUI screens from all of these machines can appear side-by-side on a single desktop. Massive software synthesis, anyone?

And Linux is free, so you can load up all of those rackmounted PCs without having to worry about how many licenses you purchased. Typically, the applications you run are also free, and source code is usually available for everything. Since Linux comes with a full suite of development tools (also

free), you can customize and extend any program you use.

GET SET

Linux is open-source software, and it carries no licensing fees. You can get the Linux source code straight from the development community, compile it yourself, and cobble it together on your hardware. But the easiest way to get up and running with Linux is to use a pre-built distribution from an organization like RedHat, SuSE, or Debian.

These Linux distributions contain the Linux operating system and lots of useful applications written by developers all over the world. The makers of these distributions typically put a user-friendly installation routine on top of this collection of software and package it all together with a pretty box and manual. You typically pay a modest fee for such a package, or you can download the distribution for free from the Internet and burn your own CDs (you can even install directly from the Internet if you want to).

Depending on how Linux is configured and adjusted, it is capable of performing widely different roles: one

Linux machine may act as a high-speed network packet router, another may be serving up the company's Web pages, and a third might be providing basic office-productivity applications like spreadsheets and word processors.

Or maybe you'd rather set it up for audio, video, and MIDI—Planet CCRMA will show you the way.

EVERYTHING TO EVERYBODY

Planet CCRMA installs into RedHat only, so I'll zero in on this particular distribution. Since the folks at RedHat don't know how you're going to use your system, they provide a general-purpose installation that provides a reasonable (but not necessarily optimal) platform for whatever you may want to do with it.

What's more, a default RedHat installation tends to be somewhat conservative. Its performance-tuning parameters won't necessarily push your hardware to its limits. And a machine running the "latest and greatest" RedHat distribution will often contain software that is several versions older than what the developers have released.

There's a good reason to err on the side of caution. RedHat wants major corporations to adopt its Linux distribution for use in enterprise-wide deployments, and major corporations want stability and easy installations on a wide variety of machines. So when RedHat assembles a new version of its distribution, they use versions of the core Linux software and applications that have seen plenty of use in the real world, and they test the whole package to ensure it will be safe and stable on all kinds of hardware.

Planet CCRMA provides three things you need to transform your general-purpose, default RedHat installation. First, you get a "tuned" Linux kernel that is optimized for low-latency operation. (The kernel is the innermost core of Linux and operates directly on your hardware. Everything else communicates with the kernel.)

You also get an advanced Linux sound architecture, which isn't provided in the RedHat distribution. This architecture is actually a collection of

IN THE BEGINNING . . .

Planet CCRMA is actively maintained and supported by Fernando Lopez-Lezcano, who is a lecturer, composer, and system administrator at CCRMA. I asked him how the Planet came into existence and learned that it didn't really happen intentionally—instead, it evolved organically. Over time, students and faculty began using Linux instead of the NeXT and SGI workstations that had primarily been in use previously. Many of the music and sound applications they were using were ported to Linux as well.

Lopez-Lezcano started creating installation packages to ease the maintenance and configuration headaches associated with the Linux machines. Then he started incorporating some of the low-latency capabilities and drivers that were under development.

"Eventually it became obvious that some students and faculty might want to install Linux at home and add the packages I had created to their machines," says Lopez-Lezcano. "At first I just pointed them to the collection of packages I had in the server, and much later I created a Web page to better organize the package collection. So that was the start of Planet CCRMA."

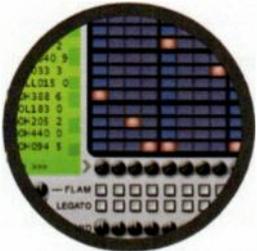
Today, Planet CCRMA is thriving, with an active mailing list and a well-organized Web site. On the site are comprehensive installation instructions and detailed descriptions of each of the Planet's applications. What's more, there are three mirror sites, which ensures that you can download all of this software from a location near you.

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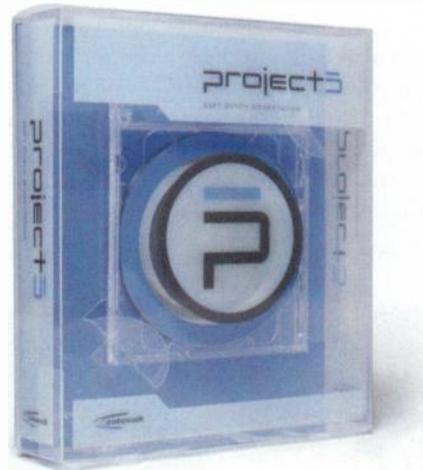
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CREATING A PLANET

Before I could set up Planet CCRMA, I had to establish a working RedHat Linux machine in my studio. I downloaded installation-CD images for RedHat from a mirror site at Georgia Tech and burned the CD-ROMs using software in Windows. Be aware that these are huge downloads. If you don't have a broadband Internet connection, you'll probably want to purchase the CDs from RedHat instead. Now would also be a good time to read the "Preflight Checkup" sidebar to make sure you're mentally prepared for this endeavor.

I dedicated an unused disk partition on my main studio computer to Linux and proceeded with the RedHat installation. A complete description of this process is beyond the scope of this article, but

interrelated projects, with interesting names like ALSA, Jack, and LADSPA (I'll cover each of these in detail later on). Without Planet, you'd have to download, compile, and configure each of these manually.

Finally, you get a huge set of applications that can take advantage of this turbocharged audio foundation. It's important to note that much of this software is created by folks who have nothing to do with CCRMA. Planet CCRMA represents a convenient packaging job for applications that are created by a host of different people in locations all over the world. You can acquire all of this software directly from the developers, but you'd have to visit a ton of Web sites to get it.

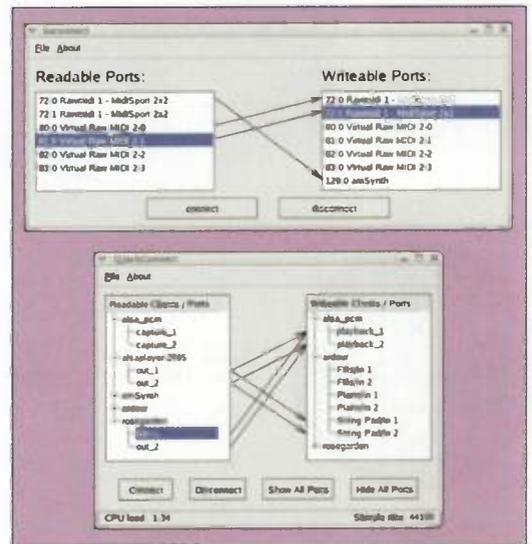


FIG. 1: Planet CCRMA provides a framework for routing audio and MIDI between your sound applications. Shown here are *kconnect* (top), which handles MIDI, and *QJackConnect* (bottom), which routes your audio.

PREFLIGHT CHECKUP

Installing and using Planet CCRMA is a fascinating journey. But before you embark on this trip, you need to give yourself a little test: Are you intrigued by technology, or do you need for things to "just work" for the sake of your music and your project deadlines? Do software failures cause you to curiously dig to the root of the problem, or do they cause you to write angry letters to company presidents?

The current state of this technology is far from a "one-button installation." But if you are reasonably savvy with technology, and if you stick to the script, you'll be fine. However, you do need a working understanding of Linux and how to get around in it (or at least have access to a friend with these qualifications). There are plenty of books available on the subject if you need to study up a bit.

If your hardware is supported

and all goes well, you'll be making music in no time. If things don't go smoothly, you may find yourself messing with device-configuration parameters and adjusting low-level parameters in the operating system.

But you are not alone in your suffering. Interestingly, I find support in the open-source community is often better than the support I get from commercial software vendors. There are Internet sites and mailing lists devoted to all of this software, and a good Google search will usually lead you to someone who has seen your problem before. And as long as you ask your questions clearly and politely in the appropriate forums, some kind soul will usually help you out. Often, you'll actually be talking to the very person who wrote the code in the first place (as opposed to an entry-level tech support representative at a commercial firm).

there are plenty of resources available to help you with it (see the sidebar "Resources and Links"). Linux can coexist peacefully with other operating systems, so I set up a dual-boot configuration that let me switch back to my commercial software in Windows 2000 whenever I needed to.

All of the Planet CCRMA software is located on the CCRMA Web site or one of its mirrors. This represents another huge download, but once again you have options. I have a fast Internet connection, so I chose to install everything online. You can also download CD-ROM images, however. That option is handy if you have a friend or workplace with a broadband connection, but lack one yourself.

Planet CCRMA uses a special installation tool that must be installed first. Once in place, this tool remembers the location of the CCRMA repository (whether it's on your CD or at Stanford University) and dramatically simplifies the process of downloading and installing application files.

Next you must replace RedHat's default kernel and sound drivers. The commands for doing this are straightforward, but because of the low-level nature of these operations, you do have to edit some system files and such (all of

this is described on the Planet CCRMA Web page in a step-by-step fashion).

This is the point at which you're most likely to run into compatibility problems with your hardware. If you can't bring up the new kernel, Planet CCRMA provides an alternate "safer" one that contains just enough changes to run the audio platform, but at the cost of higher latency.

The sound drivers come from the ALSA (Advanced Linux Sound Architecture) project. There's more to ALSA than just the drivers, but I'll get to that later.

Before jumping into a Planet CCRMA installation, you need to check the ALSA Web site to make sure that your sound hardware is supported. Unfortunately, neither my Lynx Studio LynxONE nor my MOTU 828 has ALSA support as of this writing. However, many multichannel professional devices *are* supported, particularly models from Echo Digital Audio, RME, and M-Audio. Some USB

devices require special installation steps, but Planet CCRMA makes easy work of these (I know this because I inadvertently did it the hard way for my M-Audio Midisport 2x2).

Many consumer-grade devices are also supported, so that Sound Blaster in the junk drawer is likely to work. The built-in sound circuits on my Intel motherboard had support, as did the sound chips in my laptop. But be sure to read the fine print on the ALSA Web site—in the case of my laptop, "supported" meant "for playback only."

Once you have your new kernel and drivers running, the rest is easy. Planet CCRMA provides detailed instructions on tuning your system, but most of these steps aren't necessary with recent versions of Linux. At this point, you're ready to load all the applications. I executed

RESOURCES AND LINKS

Advanced Linux Sound Architecture (ALSA)
www.alsa-project.org

Free Software Foundation
www.gnu.org

The Linux Documentation Project
www.tldp.org

Linux in a Nutshell, 4th. ed., by Ellen Siever et al. (O'Reilly & Associates, 2003)
www.oreilly.com/catalog/linuxnut4

Open Source Initiative
www.opensource.org

Planet CCRMA
www-ccrma.stanford.edu/software/planetccrma

RedHat Linux
www.redhat.com/download/products.html

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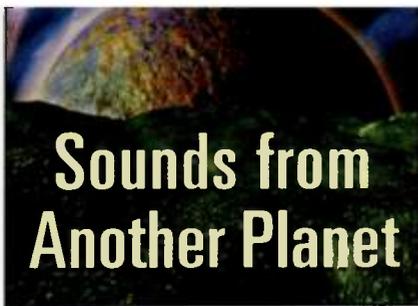
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Sounds from Another Planet

AUDIO PATCHWORK

Before ALSA, Linux typically came with OpenSound System (OSS) sound drivers. These drivers provided reasonable support and performance for a variety of devices, but they weren't necessarily low latency. However, older Linux sound applications may not be written for ALSA, so you need to be aware of OSS (ALSA can emulate OSS if necessary).

If an application supports ALSA drivers for both audio and MIDI, it's likely to have excellent performance as a standalone program. But you're missing out if you stop here, because the real power of this platform exists in its support for sound applications that communicate and integrate with each other.

There are several integrating technologies at work here. For MIDI, there's the ALSA Sequencer interface. Applications that support this interface can "publish" their inputs and outputs, allowing other applications to connect to them. If a MIDI-based drum machine and a MIDI sequencer both provide ALSA Sequencer support, you could record the activity of the drum machine by simply connecting it to the sequencer.

You can do the same with audio using a technology called Jack. Any Jack-aware application can connect its output to the input of another. Want to record your soft synth with your audio-recording program? It's as easy as connecting them together.



FIG. 2: Ardour is a full-featured digital audio workstation, supporting multitrack recording and mixing in an intuitive graphical environment.

My physical audio and MIDI connections are always available for use. When I'm ready to record from or play back to the outside world, I simply connect the ports I'm using to the applications that will do something with them.

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- Vol. 5 **Latin Element**
Sizzling Latin loops of authentic instruments and classic rhythms
- Vol. 6 **Latin Street**
A deep funky vibe packed out with pure Latin hip-hop and R&B nastiness
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There are several programs you can use to make these connections. Typically, these present the available “writers” on the left and the “readers” on the right. You connect a writer to a reader by selecting them and pressing a button. I settled on kaconnect for MIDI connections and QJackConnect for audio (see Fig. 1).

PLUG IT IN

Many Linux audio applications support the LADSPA (Linux Audio Developer’s Simple Plug-in API) plug-in architecture. Roughly equivalent to the DirectX or VST plug-ins that you’re probably familiar with, the LADSPA plug-in architecture allows a single set of audio tools to be shared by all of the audio applications on your system.

More than 100 LADSPA plug-ins are installed with Planet CCRMA, and there are quite a few applications that can take advantage of them. I found flangers, delays, reverbs, filters, phasers, and all sorts of other audio manglers. Many are quite good, some are mediocre, and others are downright goofy.

The real magic starts when all of the pieces (ALSA, Jack, and LADSPA) come together. Here’s an example: I connected a MIDI file player to a software synthesizer using the MIDI patch bay in kaconnect. Then I found an application called Jack Rack that allows you to assemble a chain of LADSPA plug-ins and use them in real time

I configured an interesting set of LADSPA effects in Jack Rack and routed the *audio* from the software synthesizer into it (using the audio patch bay in QJackconnect). Then I connected the output of Jack Rack to studio monitors and an audio-recording program. What’s more, I could connect one of my physical MIDI inputs to Jack Rack and control effects parameters in real time. The whole setup worked like a champ, which is particularly impressive when you consider that each of these programs was written by a different person in a different part of the world.

If I needed visual feedback on all of this, I could have easily started the “meterbridge” program and inserted it in the midst of any of the audio streams listed above. This notion of extreme

modularity is quite pervasive in the Linux and UNIX worlds. For years, Linux users have been stringing together simple commands to make complex operations take place.

BRING ON THE APPS

There are well over a hundred packages that can be downloaded from the Planet CCRMA site. There’s simply no way I can cover all of them—most of these programs are so deep that I can only

scratch the surface of the ones I *do* cover.

I’ll mention my favorites, focusing solely on the audio and MIDI applications (Planet CCRMA contains video, multimedia, and system applications as well). For electronic musicians, the most interesting applications are the ones that support Jack for audio, the ALSA Sequencer Interface for MIDI, and LADSPA plug-ins.

I’ll start with a full-featured digital audio workstation called Ardour. This

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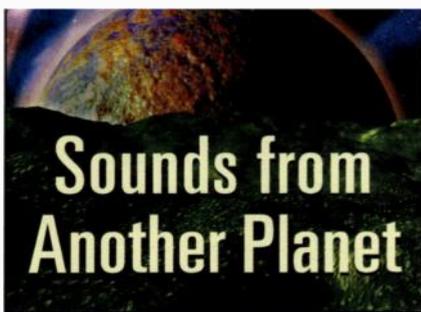
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program rivals similar commercial applications in functionality, with support for 24 or more channels of 32-bit audio. You can manage your recorded audio in an intuitive editing window (see Fig. 2), automate your mix with graphical envelopes, or mix everything down in a separate mixing screen, complete with graphical controls and level displays.

Command-line applications are still alive and well on the Linux platform, and a remarkable audio package called *ecasound* operates completely without a graphical interface. But that doesn't mean it's short on power: In addition to playback and recording, *ecasound* can be used for mixdown, effects processing, and format conversions. It even lets you manipulate audio in real time with MIDI continuous controllers.

Ecasound's mode of operation is remarkably simple. Specify audio hardware as inputs and a file as an output, and you're recording. Do it the other way around and you're playing back. Using nothing but command-line statements, you can build "chains" of arbitrary complexity, allowing you to do just about anything with your audio.

There are several audio editors in

Planet CCRMA. I like *Snd*. It's almost unnoticeable when it opens; all you see is a tiny menu bar. But the deeper you go, the more you realize what you can do. *Snd* can be completely customized with a programming language called Scheme (which is similar to Lisp). The learning curve is steep for this program, but there's not much it won't do.

MIDI MAYHEM

On the MIDI front, there are two heavy-duty sequencers available: *Muse* and *Rosegarden*. Both have many of the features you'd see in MIDI sequencers on other platforms, and you can record or import audio into either application. However, these integrated audio capabilities aren't quite as refined as what you see in the commercial applications on other platforms.

I think *Rosegarden* has the cleaner user interface (see Fig. 3). In addition to the typical track, event-list, and piano-roll views, *Rosegarden* lets you see your music in standard notation, which is great for a free program. *Rosegarden* also allows you to export music for use by *Csound* or *LilyPond* (described shortly).

Muse has a few features not found in *Rosegarden*, including a nice mixer window and integrated access to some of the software synthesizers available on the platform. I had a hard time picking a favorite sequencer—I'll probably use either or both, depending on my current project.

I did have trouble syncing these applications to other programs, however. Judging by their GUIs, *Muse* and *Ardour* can both act as MIDI Time Code masters or slaves. I should have been able to route

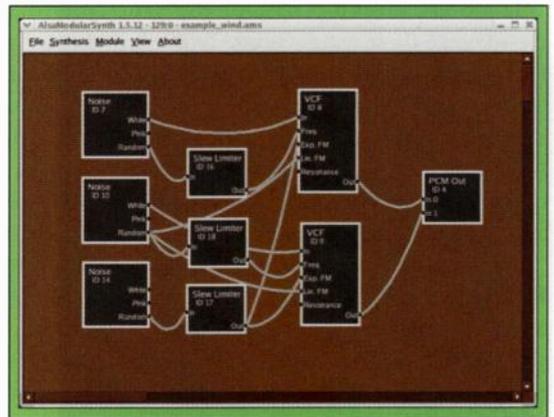


FIG. 4: *AlsaModularSynth* lets you patch together powerful synthesizer modules for complex sound creation. A number of examples are included to show you the ropes.

MIDI from *Muse* to *Ardour* (or vice versa) and have MIDI and audio running in lockstep. But neither app seemed to recognize synchronization messages coming from the other. I asked about this issue on a few mailing lists, and a few users described similar experiences.

Rosegarden and *Ardour* seem to support the Jack Transport Interface, which is a new development intended to allow synchronization using Jack. But again, the applications wouldn't sync to each other (the developers of both applications informed me that they haven't yet implemented the latest version of this interface). All of these applications are in active development, so the situation should improve by the time you read this.

THAT SOFT SOUND

There is no shortage of software synthesizers in Planet CCRMA. I counted at least eight that profess to be nothing but a software synthesizer (there are plenty of other programs that can generate their own sounds).

One of the most useful synthesizers is probably the least flashy of the bunch. *FluidSynth* can load multiple SoundFont files and play on 16 MIDI channels at once. And it does so without a graphical interface.

Once you've loaded your SoundFonts, you can choose among the loaded instruments using MIDI Bank Select and Program Change messages

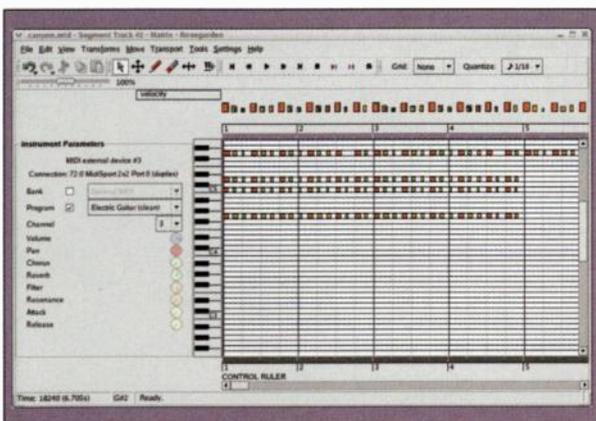


FIG. 3: *Rosegarden* provides MIDI sequencing, notation, and integrated audio, all packaged into a clean and friendly interface. You can export *Rosegarden* files for use by other Planet CCRMA applications.

(or through command-line instructions). And if you need to create or edit SoundFont files, a nice editor called Swami is close at hand.

There are synthesizers with graphical interfaces as well, including a couple that let you patch together modules in any configuration you choose. My favorite is AlsaModularSynth (see Fig. 4). This software synth has a clean, intuitive interface, powerful capabilities, and lots of included example patches.

If building your own modular synthesizers isn't challenging enough for you, you can go deeper. Planet CCRMA includes Csound (covered in depth in the July 2002 issue of EM). Also included are extensions to the Lisp programming language that enable you to generate sound, write music, and create music notation from within the Lisp environment.

AND EVERYTHING ELSE

Speaking of notation, Planet CCRMA includes LilyPond, which takes a spe-

cially formatted text file and converts it into printable music scores. I was only able to try out this program with some trivial examples, but by all accounts, LilyPond excels at creating gorgeous scores that rival hand engraving (check out lilypond.org if you'd like to see how they do it). For those who object to creating scores by typing text files, there are other programs in the Planet that can export the LilyPond format.

There are many more applications in Planet CCRMA—I found DJ tools, a high-quality sampling-rate converter, CD-burning software, and a modular audio and MIDI-processing package called Pd that resembles Cycling '74's Max/MSP (Pd was developed by Miller Puckette, who also developed the original version of Max. And there are plenty of handy utilities for smaller tasks, such as MIDI file playback, sound-card control, and format conversion.

Can you perform real work on this platform? Absolutely. Sound designers, composers, and musicians alike will find tools on Linux that they can't find anywhere else. I would be a bit wary of booting up some of these tools in the midst of an expensive recording session (at least not until they become more stable and mature); home recordists, however, should find plenty of valuable software here.

My biggest problem was the distraction factor: there is so much to explore and discover, I found myself playing with all of these goodies instead of actually making music. But that's a good problem to have, and you certainly can't beat the price. So if you're ready to travel to the brave new world of Linux audio, download Planet CCRMA and strap yourself in.

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

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Captured in Concert

How "tapers" record live performances.

By Jeffrey P. Fisher with
Calvin Engel

What do Phish, Dave Matthews, John Mayer, Zwan, and many local bands have in common? They allow taping of their live performances for personal use and trading. Today, there is an active community of concert tapers who go to shows, record them straight to mono or stereo, and share these performances for other people to enjoy. Concert taping is not bootlegging, because there is no sell-

ing allowed. Tapers just trade or freely distribute the recordings.

Many acts realize that by allowing taping, they secure some free promotion; the taper does all the work and spends all the money on equipment and distribution. Local and up-and-coming acts understand the promotional benefits of show recordings, as well as their value as tools to use to critique and improve their performances.

A few groups get smart and package their live recordings into a salable product. Frankly, I'm surprised that more local acts don't take advantage of this. So many unsigned bands build their reputation and fan base by playing in clubs, but then put out a studio album rather than an indie live CD. Recording, editing, and packaging a live CD is inexpensive and easy to do, so why not make one first, or in addition to a studio CD?

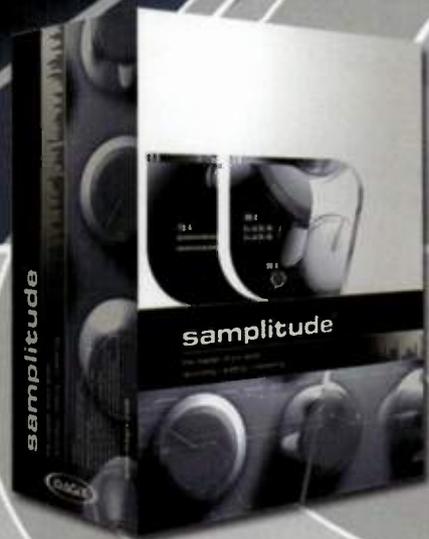
LIVE AND UNCUT

Some acts are known for the quality of their live shows that combine solid musical skills, onstage antics, and attitude. Unfortunately, their "official" live recordings often edit out the jams, banter, and other bits that make shows unique.

Concert tapers, on the other hand, strive to capture the complete, ephemeral experience that best represents



FIG. 1: The Creative Labs Nomad Jukebox 3 is an affordable, portable hard-disk recorder that works nicely in a taper's rig.



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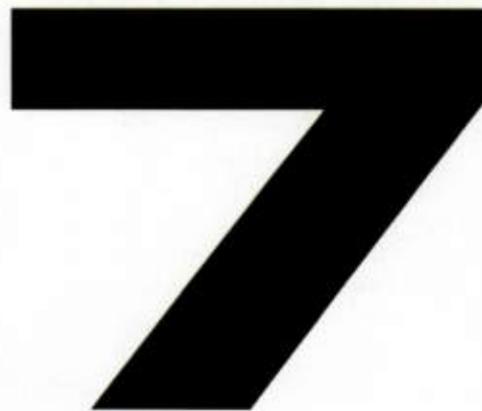
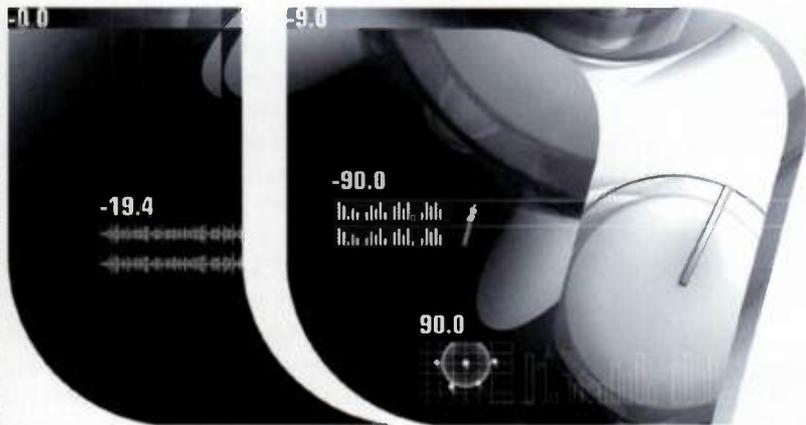
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what really happened. The idea is to record everything and keep the post-production editing and processing to a minimum. Tapers want the show to sound so immediate that the listener feels that he or she is actually there.

Joining the taping community can give you access to performances that you might not otherwise hear. And becoming an active taper yourself can be fun and interesting. If you get good, you might even be able to earn some money making quality live recordings for local acts.

CHECK THE POLICY

Because not every act allows taping, it's crucial that you get permission before you walk into a concert venue with your gear. When you're recording a local act, that might be as simple as asking the band or the band's manager if it's okay. Few acts will decline and most will ask for a copy of what you record. For well-known acts, visit their Web sites to see if you can find their "official" taping policy.

But even after you get permission from the band you should also check with the venue, because many have strict taping policies. In addition, expect to have your gear searched and heavily scrutinized by security before you're allowed in.

You can still run into problems even if you have secured permission, especially with name acts. Sometimes the venue's security personnel doesn't know about or understand the taping

policy. If they shut you down, show them your permission. If they insist that you stop, ask to speak to their supervisor. If that doesn't work, don't make a scene; pack up and enjoy the rest of the concert without taping it.

Some shows have a designated tapers' section where you can set up your rig. It is usually behind the soundboard or on the floor off to one side. Don't expect to get a console feed, though. At some venues, you're allowed to tape from your seat. The farther back you're positioned from the stage, the more crowd noise you'll pick up and the more distant your recording will sound. Many tapers prefer to be close to a P.A. stack so that they get maximum music and minimum crowd noise. The resulting recording will be more enjoyable for the average music enthusiast but might upset purist tapers and listeners, who think the crowd sounds are an essential element of the concert.

Another way to improve the music-to-crowd-noise ratio is to elevate your microphones so that they're about 15 feet in the air. That can sometimes cause conflicts with security guards who feel that running a stand higher than head height will detract from the concert experience for others in the crowd. Actually, it's often much more distracting to people around you to run a rig at head height rather than high in the air.

Generally, you have greater freedom

SITES FOR TAPERS

<http://groups.yahoo.com>

You can search Yahoo Groups and find various tapers' mailing lists that offer plenty of information.

<http://research.umbc.edu/~hamilton/shnfaq.html>

Get details on Shorten (.shn), a lossless compression format favored by tapers for Internet trading.

www.archive.org and www.etree.org
Sites that feature lossless trading.

www.dmband.com/legal_popup.asp
To see an example of a taping policy for a major artist, go to this link from the Dave Matthews Band site.

www.oade.com/Tapers_Section
A good information site for tapers.

to place your gear at smaller venues, where you're more likely to be the only person recording. The club's sound personnel may also give you a soundboard feed or even run a separate DAT for you that you can subsequently combine (using digital audio software) with your mic recordings. Don't rely entirely on a board feed because, especially at small clubs, it may be missing elements or the vocals may be too prominent.

CROWD PLEASERS

One of the biggest hassles for tapers is fellow concertgoers. Inebriated individuals may use your mic stand for support; crowd members may complain that you're blocking their view with your mics. Some people even talk or yell in an attempt to ruin your recording.

Most tapers report being frustrated by the incessant audience chatter during performances. It seems particularly bad when an act is making a DVD; the crowds often get rowdy and try to make themselves heard on the band's recording. Another problem is the proliferation of cell phone usage. The sound of ringing phones and people talking into them can get onto your tapes, and the phones themselves can cause RF interference that can get onto your recording. Not surprisingly, asking nearby people to turn off their



FIG. 2: If you want to record a show directly to CD, consider the Marantz CDR300, a portable CD-RW recorder with XLR ins and 48V phantom power.

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FIG. 3: The Edirol UA-5 mic pre and A/D converter can be modified for battery operation.

phones isn't always met with enthusiasm.

Once people realize that you're serious, however, many will ask for copies of your recordings. To accommodate their requests, ask for an e-mail address so that you can contact them about the details after the show.

GET EQUIPPED

You can get started taping concerts with a relatively minimal investment. You may even have some or all of what you need already. A typical taper's rig comprises microphones, a preamp, a mic stand or support of some type, and a digital recorder ranging in format from MiniDisc to DAT to hard disk. Remember, anything in your rig that requires power must be battery operated, because in most cases you won't have access to AC power.

Before you buy expensive gear, make sure that taping is something you enjoy. Start by recording a few shows to see how you like doing it. Don't be swayed by endless gear opinions from other tapers.

An affordable starter system might be based around a MiniDisc recorder or a portable hard-disk recorder like the Creative Labs Nomad Jukebox 3 (see Fig. 1). MiniDisc recorders made by Sharp—a popular model is the discontinued MD-MS722—let you set recording levels; other brands have automatic gain control. Although many ingenuer tapers may opt for an inexpensive stereo mic, you can get superior results with a pair of reasonably priced condensers such as the AKG C 1000 S.

Another affordable mic choice is the Core Sound binaural microphones set. True binaural recordings use microphones positioned in the "ears" of a simulated human head. Playing back the recordings over quality headphones results in an uncannily realistic sound that

preserves the spatial ambience of the original concert. It's possible to mimic this effect using a pair of minicardiod mic's placed on either side of your head and clipped to your glasses or hat.

A midpriced recording rig might consist of a portable DAT recorder, such as the Sony PCM-M1, the Sony TCD-D8, or the Tascam DA-P1, or even the Marantz CDR300 portable CD-RW recorder (see Fig. 2). The DA-P1 and the CDR300 have XLR mic inputs with 48V phantom power (which you'll need for condenser mics). If you're going to use an external mic preamp, the beyerdynamic MV100 is a good midpriced choice. The MV100 has 48V phantom power, runs on two 9V batteries, and has RCA outputs.

Many tapers like to use dedicated analog-to-digital converters because they offer better sound quality than the converters found in many portable recorders. Because of its compact size and low price, the Sony SBM-1 is a popular converter among tapers. Al-

though the SBM-1 is no longer in production, it can often be found on eBay or on many taper message boards. Alternately, Sound Devices' USB Pre or Edirol's UA-5 (see Fig. 3) can be modified for battery operation, thus providing you with high-quality preamps and analog-to-digital converters to feed your DAT or other digital recorder (see Fig. 4).

When recording to DAT, some tapers use 180-minute data DATs because they offer more recording time than audio DATs. However, DAT-recorder manufacturers generally recommend against using data DATs for audio, because they're more prone to dropouts and other problems. (For more information on the topic of recording audio to data DAT tapes, see "What's Up with DAT?" in the November 1999 issue of *EM* or at www.emusician.com.)

There are plenty of midpriced stereo-microphone choices, including several from Audio-Technica: the AT822 (see Fig. 5), the AT825, and the AT835ST, a stereo shotgun mic. The Rode NT4 is another popular choice. Many tapers prefer to use a matched stereo pair of mics such as the Oktava MC 012, the Microtech Gefell M 300, or the Neumann KM184.

Moving beyond the 16-bit world to 24 bits carries a higher price along with the promise of increased fidelity. Some tapers use laptops to capture performances into 2-track editing- and recording

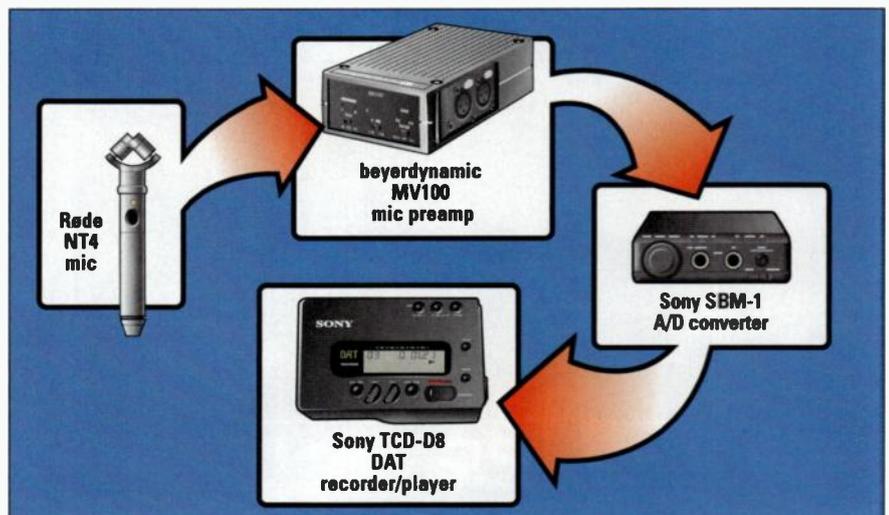
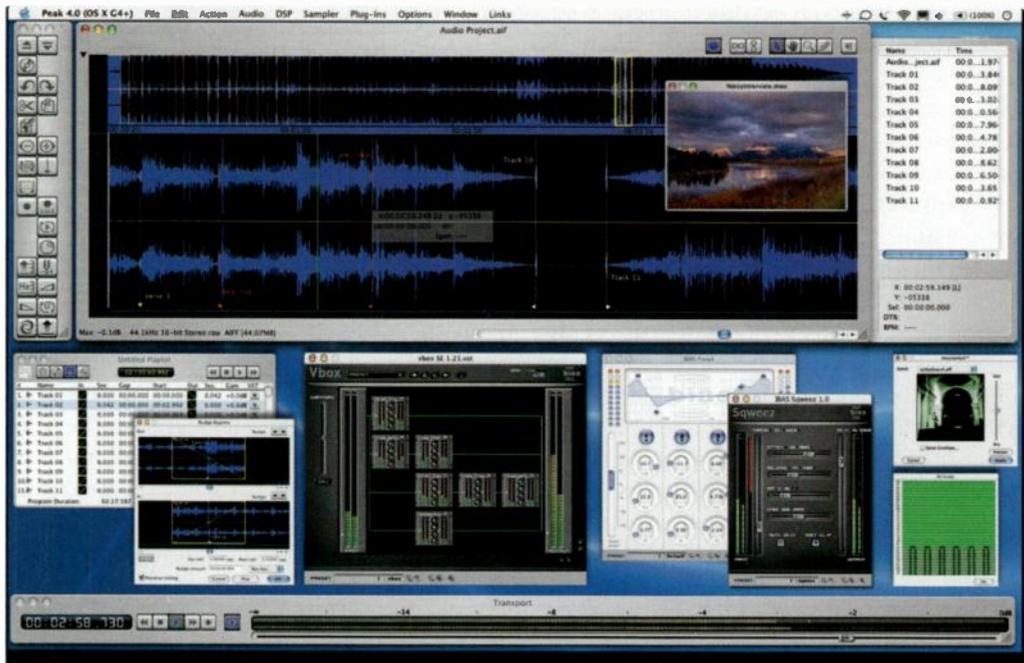


FIG. 4: The signal flow on a typical taper's rig might be something like this: a stereo mic into a mic preamp into an outboard analog-to-digital converter into a portable DAT recorder.

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software such as BIAS Peak or TC Electronic Spark on the Mac and Sony Pictures Digital Networks Sound Forge on the PC. With a laptop setup, you'll want a quality preamp like the Grace Design Lunatec V2 or V3, or the Apogee MiniMe.

To match up with that level of gear, high-end tapers reach for top-shelf mics like Brüel & Kjær 4022s, Schoeps with CCM 4V or MK 4V capsules, or even large-diaphragm Neumanns.

The collapsible Bogen Lightweight Pro Light Stand is a good choice for holding your mics. Add in an Audio Engineering Associates SMP17 Stereo Microphone Positioner, and top it off with Audio-Technica AT8410A shockmounts. Get a pair of good short XLR cables for connecting your mics to the preamp. A quality set of closed-ear headphones, such as Sony's 7506, are a must, too. And you'll also need to protect your gear from elements, people, and crime. Camera bags and backpacks are ade-

quate; the Targus RakGear Slam Backpack is a popular choice.

RECORDING TIPS

Interestingly, stereo imaging isn't as important as it once was on the concert-taping scene. These days, many tapers will opt for a mono mic aimed at the P.A. stack to get the best clarity, rather than worrying about getting a good stereo image.

For mono recordings, or when using a stereo mic, the process is simple: point the mic at the sound, set levels, hit Record, and go. Should you choose the matched-pair approach, XY and ORTF mic configurations are the most popular. (For specifics on those and other stereo miking techniques, see "More Than the Sum" from the June 2003 *EM* and "Double Your Pleasure" in the June 2000 *EM*. Text for both articles is available at www.emusician.com.)



FIG. 5: The Audio-Technica AT822 is a stereo condenser mic that can give good results in concert situations.

When possible, it's helpful to set preliminary levels during the opening act's set. It's best to set the levels a little conservatively, say peaking at -6 on the recorder's meter. Once the main act begins, push the level up slowly to peak at -2 . That should give you a good level and some wiggle room to avoid clips. Once you find the right level, leave it

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there and don't be tempted to ride the gain unless a problem occurs.

CLEAN UP AND CLEAR OUT

Tapers who are purists prefer to leave their recordings as is—uncut and unprocessed. Others clean the recording up a bit, add some beginning fade-ins and ending fade-outs, normalize levels, and perhaps use a little highpass EQ to keep the subharmonic junk out of the final mix. Part of the excitement and uniqueness of these recordings is retaining the in-between segments, so as to keep the crowd noise.

If you're fortunate enough to have two sources for the same show, say a board feed and an ambient recording, you'll need to sync them up in a multi-track audio program such as Sony Pictures Digital Networks's Vegas or Digidesign's Pro Tools, balance the mix, and render a final stereo file. Usually a 60/40 board-to-mic mix is a good place to start; you can then tweak it from

there until it sounds good to your ears.

When your recording is ready, you can burn it to CD or encode it to MP3. You might, however, consider another format, called Shorten (file extension .shn), which has become popular with the taper crowd. Unlike MP3, which compromises fidelity in order to achieve its smaller file size, Shorten is lossless audio compression that maintains full quality while reducing a WAV file's original size by 30 to 50 percent. For more information on the SHN format, see the FAQs at www.etree.org.

Finished recordings can be traded through the mail (most tapers ask for a blank CD and postage to cover shipping costs), or through e-mail, Web site upload and download, or FTP. There are several FTP servers that hold uploads (see the sidebar "Sites for Tapers") and the tapers mailing lists are always unveiling new servers. These sites are very popular. One Friday night concert was downloaded more than 1,000 times by

the time Saturday morning ended. What's especially nice is that tapers who post concerts often get early access to other shows before the public can grab them.

If there's a dark side to taping, it's that sometimes it starts to feel like a job. Even a dedicated fan can be distracted by the demands of taping and therefore not enjoy the concert. That said, many tapers notice that because they are more than casual concertgoers, they are often treated deferentially by other members of the audience. Whether you tape acts for your own enjoyment, to share with others, or to help local acts spread the word, it can be a very enriching musical experience.

Jeffrey P. Fisher composes, produces, records, teaches, and writes about music and sound. See what he's up to at www.jeffreyfisher.com.
Calvin Engel is an avid concert taper trying to balance the cost of concert tickets and taping equipment while staying on top of school work. Reach him at ChitownTaper@attbi.com.



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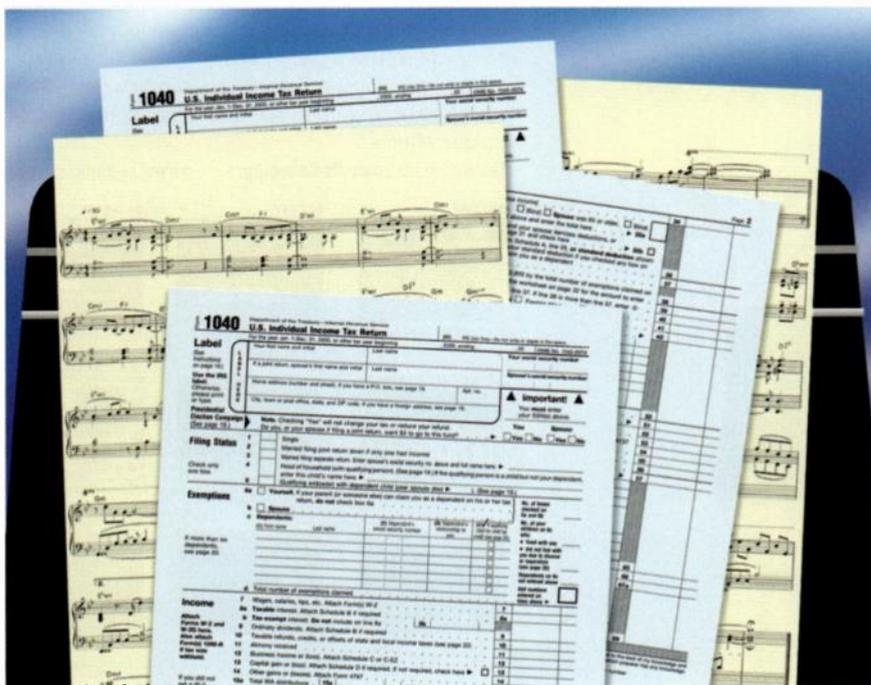
By Jeffrey P. Fisher

Every dollar you make with your music is important—that's a given. But what you might not realize is that each dollar you spend to earn your music income is equally significant. Why? It's that five-letter word we all love to hate: *taxes*. Business expenses offset your income, thereby reducing what you pay in taxes. Failing to deduct a legitimate

expense has the same financial impact as not getting paid, only you're throwing money away. In addition, if you don't have a working knowledge of your business finances, you won't know whether your endeavors are actually making money.

Therefore, you need a method for tracking all of your income and expenses as they relate to your musical pursuits. I'll show you how to set up and use a basic bookkeeping system to gain control of your finances and make tax preparation easier. (For an in-depth look at taxes, see "Working Musician: Tax Tips for Musicians" in the March 2003 EM.)

If your approach to dealing with your finances is to get a check, cash it, and spend, you need to rework your method into something more meaningful and useful. Bookkeeping is a detailed system for keeping track of where your money comes from and where it goes. To be effective, you need to learn to keep records, file receipts, and manage cash flow. The reward for your diligence is knowing how much you have earned, how much you have spent and on what, and whether you have anything left over. Maintaining an accurate picture of your financial situation helps you





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The simplest way to manage your music-business finances is to open a business checking account. Shop around, because the fees for these accounts vary widely. Paying even \$10 or \$15 per month adds up quickly.

Deposit all your business income into this checking account, and use it to pay all your business expenses. Record the reason for each expense in the memo section of each check. Since it's difficult to do business without a credit card, get one that is solely for your business. Pay your music credit-card bill with a check from your business account. Keep all your canceled checks and bank and credit-card statements in an accordion file that has ample sections for each month's activities.

INCOME CATEGORIES	
LS	Live and session performances
SJ	Composing scores and jingles
PA	Project studio audio-only production
PV	Project studio video production and post-production
MS	Music CD sales
BK	Book sales
OW	Other writing
ES	Equipment sales or rental
TL	Lessons and teaching
EXPENSE CATEGORIES	
A	Auto expenses
B	Business meals and entertainment
E	Cost of equipment over \$250
F	Fees and commissions paid to vendors
G	Travel expenses
J	Purchases on behalf of clients for resale
K	Goods purchased for resale
L	Legal and accounting fees
M	Musical equipment and supplies
O	Office supplies
P	Printing (paper and CD/DVDs)
R	Equipment or studio rental
S	Postage and shipping
T	Telephone
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X	Taxes and licenses

FIG. 1: The above table shows most of the IRS Schedule C income and expense categories and codes that apply to music-related businesses.

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This no-entry bookkeeping system is fine for the humble business. It is also a good way to start if you have no system in place. Unfortunately, it lacks the detail you need to monitor your income and control your expenses. The no-entry system also doesn't provide everything you need for filing your taxes. However, you can file the Schedule C-EZ form if you have less than \$2,500 in expenses, have no employees, and don't claim a home-office deduction. There are a few other restrictions. (Visit the IRS Web site, www.irs.gov, for forms, schedules, and filing instructions.) Chances are that you'll need or want to use the regular Schedule C form, so the no-entry bookkeeping method won't cut it in the long run.

EASY BEAN COUNTING

You need to have a specific way to record all of your business financial transactions either on paper, in a spreadsheet, or with money-management software. But which transactions do you record and how?

There are five steps that are essential to keeping your books. First, categorize your income and expenses. Second, create and use a ledger to record each transaction. Third, start a filing system to manage the paperwork. Fourth, monitor your bills and income. And fifth, use the information you learn to run your business better.

Categorically inclined. Even as a kid, I kept track of my money. I recorded the sources of it (allowance, gifts, and so on) and where I spent it (comic books, candy, and such). As my finances became more complicated, this money diary matured into the system I use today. I now use a computer instead of a notebook, though.

How you divvy up everything depends on your situation and on how much detail you want. If you have several sources of income, you may want to track them separately. Because I compose, produce, record, teach, and write about music, sound, and video, I set up multiple, independent income categories. By spreading revenue across numerous accounts, you'll see which of

your activities are the most profitable and which gigs either need a jump start or should be reconsidered.

Divide up your expenses by following the tax-deductible categories from IRS form Schedule C, Profit or Loss From Business, that apply to you. **Fig. 1** shows the income and expense codes that will most likely apply to your music-related business. Chances are that you won't use every category every year. After many years in busi-

ness, I've settled on several primary expense accounts. Some are subsets of the Schedule C categories that help me monitor certain expenditures more closely. At tax time, these individual accounts sum to just one Schedule C line. The two-letter income code and the one-letter expense code are for quickly recording the proper category in a money diary, ledger, or with software.

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care of, toddle on down to your local office-supply warehouse. Purchase enough 6 x 9-inch envelopes so that you have one for every expense. Use these envelopes to file your receipts. I prefer to use envelopes rather than file folders because all those slips of paper fall out less easily. Also buy a one-inch three-ring binder, some blank paper, and a three-hole punch.

When you get back to your office, label each envelope with the tax year,

an expense category, and its letter code. Use the binder as a money diary and for other financial paperwork, such as business account statements, invoices, and so on.

If you do your books on paper, draw lines on a few sheets to create a six-column ledger or purchase columnar bookkeeping sheets. Record your transaction details including date, activity, income or expense category, amount, and miles driven. You can set up a com-

puter spreadsheet in a similar manner. Either way, it should look something like Fig. 2.

When you receive a payment, be careful to attribute the income to the correct revenue category. Make a copy of the check (or other income record), staple it to a copy of the invoice, and file it in your binder.

For expenses, record the transaction under the correct category. Write the expense code on the receipt and file it in the appropriate envelope. Keep all your paperwork for tax purposes, as it backs up your claims should you be audited.

Ultimately, you'll want to use dedicated software for this task. The look may differ, but the fundamentals remain the same. Whether you use Intuit: Quicken or one of the Microsoft Money programs, you enter the date, the payee, the amount, and assign specific categories to each transaction. Include details in each transaction's memo section, too. You still need to keep and file those pesky receipts.

Software easily handles more sophisticated transactions, such as when you split expenses among several accounts. You can generate many informative reports, too. I use the monthly reports and often compare prior years to current year-to-date totals. Software tools usually include accounts receivable for recording money due and accounts payable for listing upcoming bills. The business editions of the popular programs even funnel expenses into the proper tax form categories, which makes filling out your taxes a snap.

The handwritten diary is still useful for recording business mileage, though, because the IRS demands evidence of mileage driven for business purposes. A few programs for handheld computers also record mileage.

Getting paid. You need to establish procedures for billing your clients. You can either bill your clients on delivery or invoice them with payment terms. Sometimes you get cash before delivery, such as when someone buys from your Web site and then you ship the product to them. Payment on delivery is best suited to direct sales (at a gig, for

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11/27 - 3:00	Post office: Web orders	S	(18.85)	8
11/28	AJF invoice #102603	PA	1762.44	
12/3	Phone bill #123		(78.17)	
12/4 - 3:00	Office store: envelopes, paper, binder, and paper punch	O	(14.63)	27

FIG. 2: You can easily draw up your own ledger or use purchased ledger sheets to keep detailed notes on your expenses, including miles driven for meetings or gigs.

instance) or when delivering a single service, such as studio time to a client.

You'll often need to offer credit terms, especially when dealing with larger companies. The most common is *net 30*, meaning the total bill is due in one month. If a gig is substantially complex and will take a significant amount of time, consider creating a series of payments, such as one-third up front, one-third at a major milestone, and the final one-third on delivery.

Print your invoices on your letterhead with the word *Invoice* big and bold on top. Assign each invoice a unique number. I base mine on the date, for example "062403." Itemize everything; the more details you include, the fewer clients will call with questions. Show exactly what each item or service was and what it cost. Make the total amount due big and bold and indicate your payment terms prominently. Mail invoices promptly and keep a copy of each one

in the binder. For immediate sales, hand the invoice to your client so he or she can pay you.

Separate your paid invoices from the unpaid ones. That allows you to see who owes you money so you can call and remind them. Alternatively, use software to monitor unpaid invoices.

So flows the cash. One unfortunate downside to running your own business is the erratic income coupled with regular and sometimes unexpected expenses. Managing your cash flow becomes crucial; you must stay on top of money owed to you and watch for out-of-control expenses. Keep a little extra money in your business account to help ride those ebbs and flows. No matter how hard you try, though, you may become strapped for cash occasionally.

I'm not a huge advocate of debt, and I prefer to buy items only when I have cash to pay for them. However, a credit card can be a useful and convenient

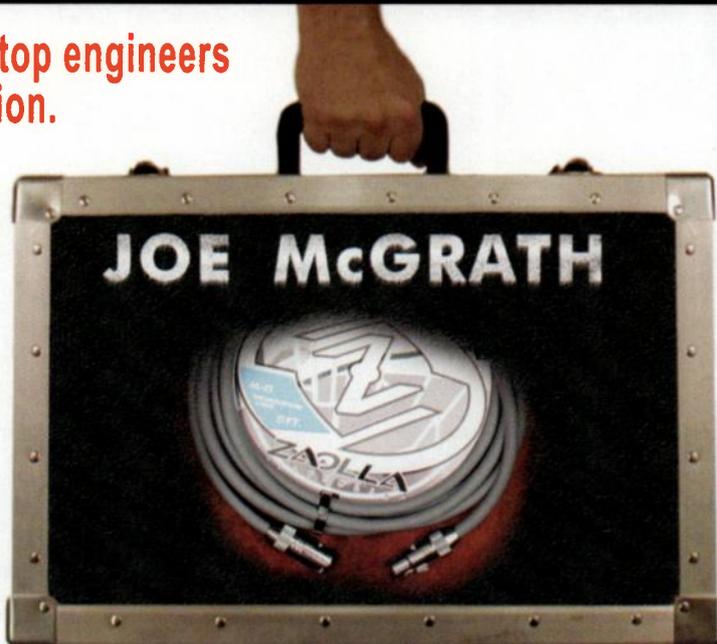
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short-term financial tool. There are many ways to use the power of credit to your advantage without getting mired in high-interest debt.

If, for example, you know your card's billing cycle, you can buy what you need after its closing date and have a whole billing cycle before you must send a check. This strategy works best when you have to buy items for clients and must wait for reimbursement.

Many companies offer "same-as-cash" deals, in which they charge you equal installments over time. Other incentives, including no-payment and no-interest deals for a few months, can make more expensive purchases easier to acquire. Be sure to pay off balances before the due date to avoid interest and other finance charges.

Last year I bought a new computer on one retailer's no-interest, 18-month plan. I've been sending in enough each month to pay it off before its due date and have saved nearly \$500 in interest so far.

WHAT'S GOIN' ON?

Creating and maintaining a financial tracking system may sound like a lot of work, and at first it can take some time to get everything running well. I've been managing my finances with these methods for decades now and have never regretted the effort I've put in. Spend a little time each day or once a week to keep everything updated, and you'll be rewarded.

When you see your monthly and year-to-date income and expense totals, you'll always know how good business is or isn't. You'll see where you're overspending, so you can cut back. You'll see where you're wasting time on activities that bring little return. In short, having a handle on your finances gives you real insight into what you should and shouldn't be doing. You'll plan better and make more informed career decisions.

Jeffrey P. Fisher's latest book, *Moneymaking Music*, is a detailed guide to starting, growing, and sustaining your music-business career. Learn more about it and other resources at www.jeffreyppfisher.com.

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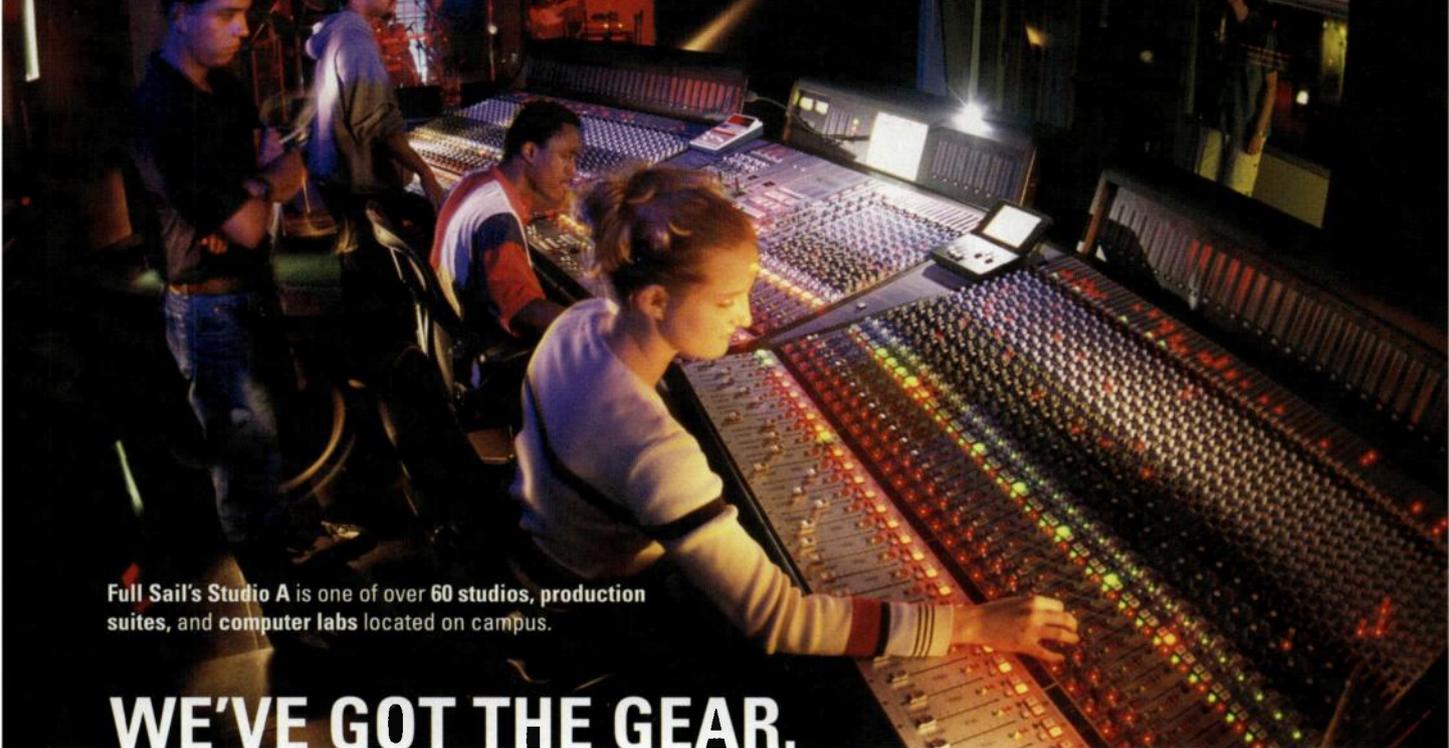
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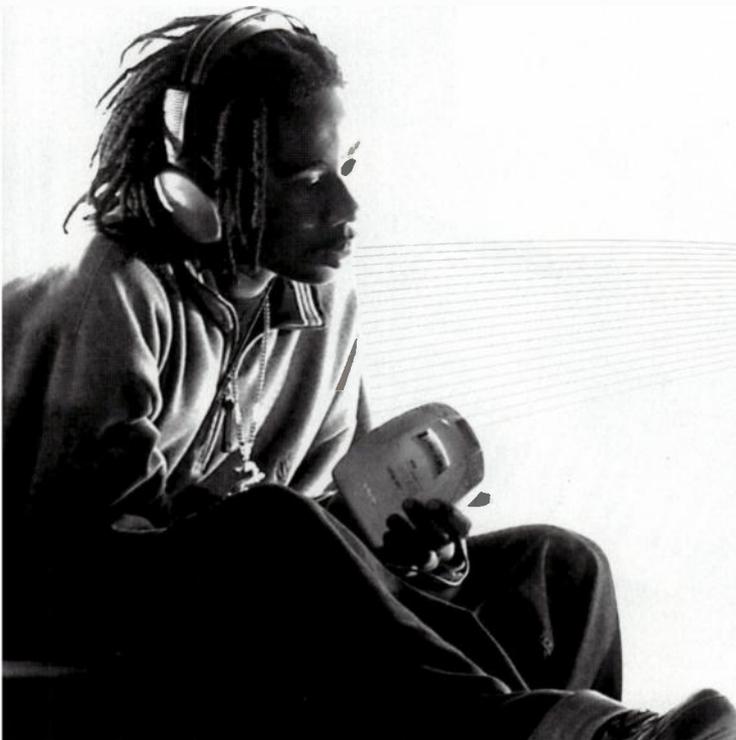


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REVIEWS

ROLAND

V-SYNTH

*Explore the inner life
of samples.*



By David Battino

The moment you turn it on, you get your first clue that the Roland V-Synth is different. For the next half-minute or so, a progress bar crawls across the big purple touchscreen, with the mysterious heading, "Processing . . ." Once those preparations are complete, the V-Synth springs to life, delivering unprecedented sonic control.

For the past few years, most breakthroughs in synthesis have debuted in software synthesizers. Drawing on the best of both worlds, the V-Synth combines the informative graphics and powerful wave-warping abilities of software with some exceptional hardware design. Instead of poking at pixels with a mouse, you can sculpt sound with a variety of expressive hands-on controllers, including dual D Beam infrared sensors and the new Time Trip pad.

At heart, the V-Synth is a sampler, but unlike a traditional one, it gives you independent control over pitch, duration,

and formants (the characteristic frequencies in a sound). That kind of control lets you play chords with a sampled vocal phrase and have all the syllables



FIG. 1: The V-Synth is a DSP-based keyboard instrument that combines analog-synthesis modeling and VariPhrase sampling with numerous hands-on controllers.

96

Roland V-Synth

104

Magix Samplitude Professional 7.11 (Win)

110

Arturia Moog Modular V 1.1 (Mac/Win)

114

Digidesign Pro Tools 6.1 (Mac/Win)

120

Quick Picks: FMR Audio RNP8380 Really Nice Preamp; Metasonix TM-3 Gas-Tube Dual VCO with Suboctave; Kenton Spin Doctor; Native Instruments Absynth 2 (Mac/Win)

Control Yourself

Your music hardware and software gives you all the instruments and recording capabilities you could dream of. But operating these fantastic tools with a mouse is like juggling with one hand tied behind your back. Whether you're a control freak or just tired of mousing around, the Evolution UC-33e lets you unleash the full potential of your music.



The UC-33e is the affordable, easy-to-use remote USB controller for any computer music system or MIDI setup. It allows instant and simultaneous control of up to 47 different parameters—and with 33 memory locations, changing setups is fast and easy. Controller Mute lets you preadjust controller positions without sending data, then send all current settings at once using Snapshot. Use the UC-33e with a conventional MIDI setup, for live performances, or as a remote control for your existing studio rack. 30 presets allow immediate control of the most popular virtual instruments and host applications like Reason, Live, Logic, Cubase SX, Native Instrument's B4 and more.



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Front-panel overlays
for popular music software

line up, or twist a knob and accelerate a drum loop to twice its original tempo without changing the pitch, or transform male voices into female ones. Those sample-stretching features are an evolution of the VariPhrase technology Roland introduced in its pricey VP-9000 (reviewed in the May 2001 issue)—hence the *V* in V-Synth.

The V-Synth also features analog-synthesizer modeling and an updated collection of the Composite Object Sound Modeling (COSM) effects first seen on the VG-8 guitar processor. Consequently, you might assume (as I did) that the V-Synth is simply another “greatest hits” collection with the Time Trip pad and a few new COSM effects slapped on top. But not only have all those components been improved, they’ve been thoughtfully integrated into a greater whole. The V-Synth has some rough edges, and it definitely isn’t the keyboard for everyone. However, if you want to twist sounds into startling new textures, play leads that are never static, or bring out the inner life in samples and loops, it offers a lot to explore.

GOOD SCREEN FUN

The V-Synth’s front panel is cleanly laid out, with performance controllers to the left and synthesis controls to the right of its large backlit touchscreen (see Fig. 1). The screen responds quickly to your touch and provides plenty of information, including graphic envelopes. Some areas are too small to hit accurately with a fingertip, but you can move to any field with the adjacent cursor buttons and adjust values with the Increment and Decrement buttons or the data wheel.

The front panel provides 20 rubber knobs for common parameters and 4 wiggly sliders for envelope segments. The sliders control whatever envelope is currently selected (pitch, formant, or filter

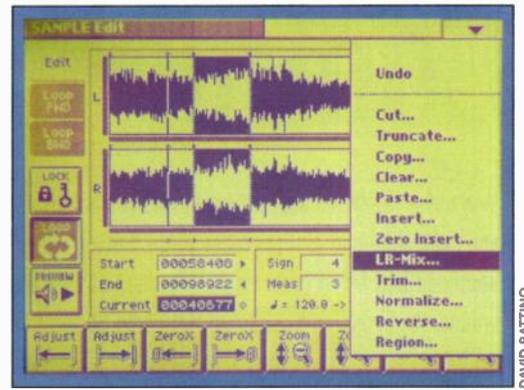
resonance, for example) and not just the master volume envelope. When you move a knob or slider, the screen shows the new position but doesn’t help you return to the original value. The knobs and sliders transmit SysEx rather than MIDI Control Change (CC) messages. However, the slick Modulation Matrix screen lets you map external CCs to adjust the same parameters.

Above the knobs are three groups of Structure buttons that light up to show the active components in the current signal chain. I could switch components in and out as I played, with held notes retaining the older settings. That let me start a drum loop with my left hand, then turn on a COSM block and add a radically filtered version of the groove (in perfect sync, thanks to VariPhrase) with my right (see Web Clip 1). Dedicated buttons let you switch the three effects processors (reverb, chorus/flanger, and multi-effects) on and off with one click. They sound good and have plenty of parameters.

CONTROL TWEAK

At the far left of the panel is the novel Time Trip pad, a 3.5-inch-square sensor that detects the position and movement of your finger, though unfortunately not variations in pressure. You can configure the pad to control as many as 16 parameters from a list of 77 that affect the oscillators, COSM effects, main amplitude envelope, and effects processors. Pressing the Hold button locks the current parameter value. All 37 buttons that toggle features on and off light up when you enable them, which makes it easy to see what’s going on.

In X-Y mode, each pad axis can transmit values from 0 to 127 or from -63 to



DAVID BATTING

FIG. 3: The stereo waveform editor lacks crossfade looping, but automatic zero-crossing detection and bidirectional loop support help to compensate.

63. In Time Trip mode, dragging your finger in a circle scans forward or backward through a waveform, and pausing loops a short segment at the current position. With practice, I transformed a vocal sample from “Turn off” to “Honor, nonner, on-and-off” (see Web Clip 2). Trippy indeed! You can control two additional parameters in Time Trip mode by sliding your finger from the edge of the pad to the center.

Other controllers include Roland’s signature D Beam (a proximity sensor), two assignable knobs, and the standard Roland lever that bends pitch when you move it sideways and sends Modulation data when you push it forward. Like the pad, any of those controllers (and any incoming MIDI CC) can be mapped to any of the 77 synthesis parameters. All but the lever can transmit CCs as well; in fact, the D Beam can send four unique CC streams per side. However, the pad has coarser resolution than the other controllers, producing significant stair-stepping—so much that I occasionally used it as a creative effect (see Web Clip 3). Unfortunately, the other controllers also suffer from zippering when pushed to extremes, which can make the sound rough.



FIG. 2: The PC Card slot offers flexible storage; with an adapter, you can add a variety of flash RAM cards or even a tiny hard drive. The USB port provides a MIDI interface or drag-and-drop file transfer to a computer.

The V-Synth's semiweighted keys are shorter than average, but have a snappy feel and a satisfying inertia. Aftertouch is controllable without being the least bit squishy. Octave and semitone transpose buttons are easily accessible. You can assign shortcuts for 64 patches to the eight banks of Patch Palette buttons. You can also view 16 patch names at once by touching the onscreen List button. The version 1.5 upgrade of the operating system (see the sidebar "One Point V") lets you search for sounds by category.

JACK IT UP

One of my pet peeves with keyboards is when the jacks are labeled only on the back panel, forcing me to stand on my head to suss out the connections. Happily, the V-Synth's jacks are identified on the top panel as well. At the left side of the back panel is a PC Card slot for backup storage (see Fig. 2). With a commonly available adapter (about \$20),

you can use several kinds of flash RAM cards. Next door is a USB socket; in Bulk Storage mode, the V-Synth shows up as an external hard drive on your computer, making it drag-and-drop simple to back up samples and patches or import new ones. In MIDI mode, the USB jack functions as a MIDI interface, but switching between modes was awkward, so I found it easier to use the standard MIDI jacks and an external interface. Optical and coaxial S/PDIF I/O are both provided. The optical jacks have a clever shutter so you don't have to fumble with those tiny plastic plugs.

The rear panel also has jacks for a sustain pedal and two expression pedals, which can transmit CCs. Stereo sampling inputs accept mic or line-level signals. Rounding out the back are the main and direct stereo outputs. Strangely, to use the direct outs, you have to disable the multi-effects processor, though the reverb and chorus processors remain active.

HEAVY STRUCTURE

A V-Synth Patch contains six components: two oscillator blocks, two COSM blocks, a modulation block that mixes the oscillator blocks, and a time-variant amplifier (TVA) block, which contains an ADSR envelope and LFO that control the final output level. Those blocks can be organized into one of three arrangements called Structures. Which Structure you select determines whether the COSM effects are applied to one or both oscillators. The sound can then be routed through the three effects blocks.

Each oscillator block contains a single LFO that can control pitch, level, and, depending on the type of oscillator, either time and formant or pulse width and low-frequency emphasis. Those parameters also have four dedicated ADSR envelopes. The LFOs generate eight waveforms, which can sync to the internal tempo or MIDI Clock. Many of the COSM blocks include an LFO and one

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or more envelopes too, so you can craft some extremely animated timbres.

You can split each Patch into 16 keyboard zones, though the process is poorly described in the manual and un-intuitive. (You have to enter Zone mode, set the keyboard split point, select the Zone you want to edit, then exit and either program the split sound

from scratch or enter Patch Copy mode and copy components of a preexisting patch into the new Zone.) All Zones in a Patch share the same effects and controller settings (and transmit on the same MIDI channel), which means you can't pitch-bend or sustain just one side of a split; that is a major drawback.

The V-Synth is 16-part multitimbral,

but layering isn't supported directly. You can kludge together a global layer by entering System mode and setting as many as 15 additional parts to the same MIDI channel. Like splits, they share the same controller settings as the primary patch, and the only way to adjust the relative levels is by reprogramming the component Patches. (When playing multiple channels or the V-Synth from a sequencer, you can adjust the levels of the different multitimbral parts over MIDI, of course.)

OSC AND RECEIVE

A V-Synth oscillator can use analog modeling, PCM waveforms, or external audio. Ironically, two of the simulated-analog waveforms alias like crazy in the upper octaves; most of the others also alias to a minor extent. Modulating the pitch more than a few semitones also creates some zippering noise, which is audible on pitch bends, for example. You can smooth and fatten the sound with detuning, COSM, pulse-width modulation, and even a parameter called Fat, but the V-Synth's analog section left me a bit cold.

The real excitement is in PCM mode. Thanks to VariPhrase's real-time pitch-shifting and time-stretching, you don't have to worry about multisampling; a single sample can stretch across the entire keyboard. (Indeed, it's not possible to create multisamples on the V-Synth, though several of the factory waveforms are multisampled.) In practice, shifting most sounds more than an octave up produces snarling artifacts; downward shifts are more forgiving. You can also switch VariPhrase off for traditional sample playback.

The V-Synth has four playback modes. Retrigger mode starts the sample at the beginning with each new keypress. The magical Legato mode starts each new sample at the point where the current sample is playing, which lets you harmonize each word in a vocal on the fly or emphasize individual drum hits in a loop by doubling them with a deeper version. In Step mode, each keypress triggers the next slice in a sample (during sample encoding, the V-Synth adds slice points to samples anywhere it

V-Synth Specifications	
Sound Engine	analog-synthesis modeling; VariPhrase PCM; user sampling with independent time, pitch, and formant control
Audio Inputs	(2) unbalanced 1/8" TS analog (switchable mic/line); (1) stereo optical S/PDIF; (1) stereo coaxial S/PDIF; internal resampling
Audio Outputs	L/R main: (2) unbalanced 1/8" analog; L/R direct (bypasses effects): (2) unbalanced 1/8" analog; (1) stereo optical S/PDIF; (1) stereo coaxial S/PDIF; (1) 1/8" stereo headphone
Keyboard	(61) notes; Velocity, Channel Aftertouch
Polyphony	(24) notes (program dependent)
Multitimbral Parts	16
Sampling Format	analog inputs: 16-bit, 44.1 kHz (24-bit, 96 kHz converters); digital inputs: 16-bit, 44.1/48/96 kHz
Audio File Import/Export	WAV and AIFF (loop points ignored)
Pedal Inputs	(2) 1/8" control; (1) 1/8" sustain
Memory	(512) RAM Patch locations; (999) RAM Wave locations; 50 MB sample RAM (32 MB preloaded)
Oscillators	(2) with analog suboscillator; types are PCM, external input, and modeled analog (saw, LA saw, square, LA square, triangle, sine, ramp, Juno, HQ saw, HQ square, noise)
Oscillator Cross-Modulation	ring, FM, envelope ring, sync
Filters/Waveshapers	(2) COSM processors with (16) types
Envelopes	(1) global level ADSR; (1) pitch, (1) Fat, (1) pulse width, (1) time, (1) formant, and (1) level per osc
LFOs	(1) per oscillator; (1) per COSM block; (1) per TVA; tempo sync (double whole-note to 32nd-note resolution); 8 waveforms
Effects	multi-effects (41 types), chorus (8 types), reverb (10 types)
Arpeggiator	(8) types; (32) steps; (16) events per step incl. CCs; programmable; adjustable gate and swing; 20–250 bpm or external sync
Controllers	(2) knobs; (2) D Beam sensors; Time Trip Pad (x-y/rotational/radial); pitch/mod lever
MIDI	In, Out, Thru
Storage/Interfacing	PC Card; USB
Display	320 × 240-pixel, backlit LCD
Dimensions	41.6" (W) × 4.4" (H) × 15.7" (D)
Weight	28.9 lb.

encounters a transient—at the start of a drum hit, for example). In Event mode, chromatic notes trigger adjacent slices. Those two modes are especially interesting in conjunction with the arpeggiator, because they let you rearrange drum hits or syllables in a phrase.

SAMPLE PLEASURES

The V-Synth ships with 342 mono samples in memory (stereo samples reduce the polyphony slightly); you can overwrite them and then individually restore them later. With the factory samples loaded, about 18 MB of RAM remain, which will hold a maximum 214 seconds of custom samples. Samples encoded in VariPhrase format require additional data—the more complex the encoding, the larger the resulting file.

Importing WAV and AIFF files from my computer was a snap, though I was disappointed that the V-Synth didn't import the loop points. I got around that by writing down the loop points before

making the transfer, and then entering them into the V-Synth with the data wheel. Imported samples are converted to 16-bit, 44.1 kHz resolution, and their names are truncated to 12 characters.

Sampling (or resampling) on the V-Synth is wonderfully straightforward. Eight presets for different tasks call up the optimum number of channels, input source, recording-trigger mode (manual, MIDI Song Start, level, or MIDI note), input effect (compressor,

limiter, or noise reduction), and counting. Editing goes quickly, thanks to a large waveform display and onscreen buttons that zoom in and find zero-crossings (see Fig. 3). A handy calculator button detects the selected area's tempo, which is later encoded into the file for sync. You can also extract a region and save it to a new file. Other editing commands include Cut, Copy, Paste, Insert (clipboard data or silence), Truncate, stereo-to-mono, Reverse,

PRODUCT SUMMARY

Roland

V-Synth

keyboard synthesizer/sampler

\$2,695

FEATURES	4.0
EASE OF USE	4.0
QUALITY OF SOUNDS	3.5
VALUE	3.5

RATING PRODUCTS FROM 1 TO 5

PROS: Unique sound with extensive real-time control. Solid construction. Ergonomic layout. Expressive D Beam and Time Trip controllers. Drag-and-drop computer-file transfer. Automatic tempo synchronization.

CONS: Significant aliasing on analog models. Zippering noise from controllers. Underbaked, awkward layering and splitting. No crossfade looping. Imported samples lose loop points. Editing knobs send only SysEx.

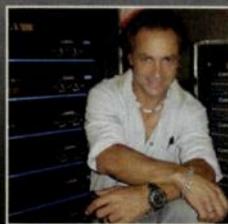
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Normalize, and Trim, which applies a fade of up to 2 ms (100 samples) to the beginning and ending of the waveform.

I wish longer fades were available and that the keyboard weren't disabled during editing; it would be easier to audition loop points by playing different pitches. I was disappointed to find no crossfade looping, but I was able to make smooth loops by setting the loop points to zero-crossings and specifying alternating (back-and-forth) looping. I also wish the V-Synth could play the segment of the sample after the loop when you release the note.

After editing, you encode the sample to VariPhrase format on a screen resembling Propellerhead ReCycle. The V-Synth automatically finds slice points; you can adjust them, delete them, and add more, previewing each slice with a button. V-Synth offers four encoding algorithms; Lite creates the smallest files but the most artifacts. The others are optimized for solo lines, rhythmic samples, and ensemble samples. Picking the "wrong" type can generate some wild, bubbly textures, but encoding adds data to the samples rather than altering the original recordings, so you can go back and try again.

COSM, DAN-O

Instead of ordinary filters, the V-Synth provides 16 mighty waveshaping tools such as amp simulators, guitar-body resonators, and frequency shifters. I counted about 37 filter variations as well, including ganged bandpass and dynamic

lowpass models. The new sideband filters can impart pitch to drums (or even to noise) so you can play chords and melodies. It's like a vocoder effect, but easier to set up. Although the filters all sounded good, sweeping them sometimes caused zipping.

I had a lot of fun with the V-Synth's arpeggiator, which allows you to record your own polyphonic phrases (see Fig. 4). Each phrase can contain a maximum of 32 steps, with as many as 16 events (notes or Control Changes) per step. Mapping a CC to reverb depth or distortion can make an individual note jump out. The Swing parameter lets you alter the rhythmic feel of a sampled loop.

FACTORY FLOOR

Most synths include a few special-effect sounds in the last bank to show off their prowess. On the V-Synth, it seems like the majority of the 287 factory Patches are sound effects. Many have an abrasive, "digital" quality to my ears. However, quite a few of them turned heads when I played them at jam sessions.

The COSM-powered TopOfTheWrld is the most searing synth guitar I've ever heard, and like all the factory patches, it makes extensive use of the V-Synth's controllers. VoixBulgares sounded like singers, not a keyboard part. And the spacious pads and talkative Clavinets fit right in. You can also find scores of free new patches at www.v-synth.com, many with MP3 demos and programming notes.

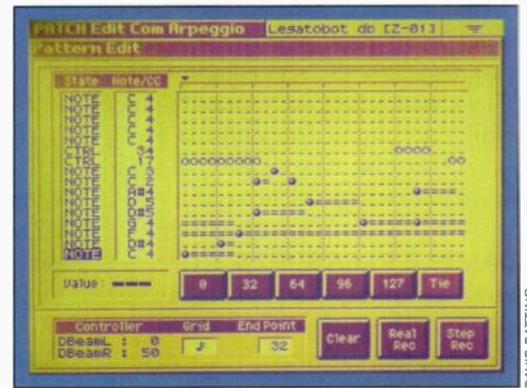


FIG. 4: You can record your own polyphonic arpeggiator patterns in this piano-roll window. Unfortunately, the notes aren't arranged from high to low.

.v-synth.com, many with MP3 demos and programming notes.

SAMPLING EVOLVES

The V-Synth is one case in which a greatest-hits collection surpasses the originals. Computer users have grown accustomed to some of its features in computer programs such as Acid, Live, and Kontakt, but the V-Synth puts them into a hands-on instrument with keys. Its sturdy construction and clear, efficient layout reinforce the feeling of quality.

The primitive split and layer facilities are a drag, and for a keyboard with so many controllers, it's disappointing that the V-Synth transmits on only one MIDI channel at a time. Its sound can be harsh due to aliasing and zipper noise. Pitch shifting produces noticeable artifacts, so I hope Roland implements user multi-sampling. However, many of the most popular synthesizers have endured because of their sonic quirks.

The V-Synth lets you rip open samples and explore the exotic textures within. Being able to play chords with sampled phrases and have them stay in perfect sync is a revelation. It costs more than the average keyboard synthesizer, but the V-Synth is an instrument with extraordinary depth and personality.

David Battino is hard at work on *Crank It Up to 1*, a book about digital music production based on interviews with groundbreaking artists, producers, and programmers. More at www.crankitupto1.com.

ONE POINT V

The free OS 1.5 update (a 17 MB download) brings 12 new features to the V-Synth. You can assign Patches to 1 of 16 categories, which makes it far easier to browse through them. The update provides 18 additional PCM waveforms (mostly vocal percussion, handy for adding catchy attacks). The analog section gains two new waveforms (the thicker LA square and saw) and a suboscillator. A TB-303 filter model beefs up the COSM section.

Installing the update was easy, but because I had inadvertently deleted some factory samples before updating, I had to do some convoluted file manipulations to get my custom Patches to point to the right samples. It's unlikely that Roland will be able to change the file system, but perhaps the company could release some companion software that will do a better job of maintaining the links between patches and waves.

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Harp 2 (Wurlitzer)

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MAGIX

SAMPLITUDE PROFESSIONAL 7.11 (WIN)

An audio-editing software workstation with power to spare.

By Dennis Miller

First appearing on the PC in 1994, Samplitude has evolved into one of the most powerful and full-featured audio programs on the market. It lets you create up to 999 (combined) audio and MIDI tracks, can display individual video frames, supports 5.1-surround editing, and provides an array of professional-quality effects and customization options. In other words, Samplitude Professional 7.11 has the potential to be the center of all your music-making activities.

EM reviewed Samplitude Producer

2496 6.02 in the May 2002 issue, so I'll focus on what's new since that review. As with past updates, the list of new and enhanced features is substantial. I'll therefore only include a sampling of the important new components along with a short overview of the program. Note also that Samplitude Professional is the middle sibling of a family that includes Samplitude Classic on the low end and Sequoia on the high end. The differences between the versions are described at the Magix Web site.

FROM THE TOP

In addition to its huge number of audio-editing options, Samplitude now offers limited but functional MIDI support and a new video-editing suite called Video deLuxe 2.0 to get you going in the world of audio for video. The program includes CD-burning capabilities and can apply nondestructive effects on the fly while burning. It handles up to 32-bit, 192 kHz sampling rates and has a dedicated screen for editing stereo files.

Samplitude is highly customizable and offers several preset "workspaces" that are optimized for various types of

Minimum System Requirements

Samplitude Professional 7.11

Pentium III/700 MHz or Athlon/700 MHz;
256 MB RAM; Windows 98/2000/ME/XP

jobs. When you first run the program, the Startup Wizard provides you with layouts for CD burning, multitrack editing, and recording, as well as a layout called Power User, which puts the program's entire tool set at your disposal (see Fig. 1). You can save your own custom layouts as needed.

Samplitude Tracks consist of audio and MIDI Objects that represent in and out points in the actual files on your system. You can edit individual Objects using the Object Editor, where you'll find a large number of options grouped into three categories: Object Effects, Position/Fades, and Pitchshifting and Timestretching. Tracks can be individually resized, and Objects, entire tracks, and even (in the stereo-editor screen) a highlighted range can be saved as a new file.

GET WITH THE HOST

New or enhanced features appear in nearly every corner of the program. Among these is direct hosting of VST instruments and effects (no VST-to-DX adapter needed). You can automate VST (but not DirectX) plug-in parameters using one of two methods: drawing envelopes to control parameters directly on the main screen or recording fader movements in the VST Parameter dialog box, which displays assignable faders for up to eight parameters at once. (The VST Parameter dialog also contains a feature for randomizing all parameters.) Fader motions that you record in the Parameter dialog are available for editing from the main screen (see Fig. 2). Though you can automate any parameter using the Parameter dialog, you can't simply record the movement of knobs and sliders directly from your plug-in's main interface. That would be a nice touch.

You can also map MIDI controller data from an external device to specific parameters of a VST plug-in in the VST



FIG. 1: Samplitude's main project screen is highly customizable. Startup wizards allow you to choose from a number of custom workspaces, including Power User (shown here), which puts all the program's controls on the screen.

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MUSICIANS FIRST IK MULTIMEDIA

Automation screen. This screen provides a list of all the effects and Instruments currently loaded, and it lets you choose which ones you want to work with. A MIDI Learn feature lets you assign a controller to a parameter just by moving that controller on your external device, and a Setup screen offers advanced options, such as controlling the resolution (calculated in number of samples per step) of the automation data.

Like volume and pan data, effects automation “lives” with the track, so if you design a fancy automation curve and decide that you want to use it on some other audio, just substitute a new Object for the existing one, and the automation remains in place. You can’t, however, copy settings and paste them into a new track.

Assigning a VST instrument as the destination for a MIDI track is a breeze, and routing the audio outputs of an instrument is similarly easy. In about a minute, I was able to configure a routing scheme with six audio outputs from Native Instruments Reaktor 4 going to different tracks, each with its own chain of effects. Unfortunately, as in many other VST hosts, you can’t tweak the controls of a VST instrument while recording its output—you must first record your automation, then bounce the audio to a new track. You can also use Samplitude’s handy Freeze feature, which “prerenders” all audio, MIDI, and effects on a track to a new WAV

file and automatically substitutes the new file for the data that was frozen.

IN EFFECT

Several new internal effects significantly enhance Samplitude’s toolkit. Among these is a high-quality vocoder. The vocoder reads the audio in an Object or a track and uses it to modulate one of the ten WAV files that Samplitude provides as carriers. Or you can use any WAV file on your system. If you prefer, you can use the left and right channels of a single stereo file as modulator and carrier respectively. You can also override the carrier audio by adding copious amounts of noise, which is great for creating whispering or breathy vocal sounds. You can even change in real time the number of bands (up to 100) that the vocoder’s two filter banks use. The wide range of features the vocoder provides is typical of the program’s thoroughness—nothing about this software is half-baked.

Your guitar tracks will sound great using the new Amp Simulator, which offers ten speaker models and five amp models, all fully programmable. The Practice Amp model brought back memories of my first amp (a Silver-tone), and the British Stack preset adds some hefty distortion.

IN MY ROOM

The new Room Simulator allows you to apply the impulse response (ambient characteristics) of one sound to another.

The over 400 MB of included impulse-response files, which range from tunnels to garages to small rooms, provide a wide range of sonic environments. Once you register, you can access an additional 30 MB of files “sampled” from the TC Electronics M3000 effects processor.

For even more esoteric purposes, you can use any WAV file on your drive as an impulse response. That can produce all sorts of filtering and reverb effects, including many that are unpredictable (though often very useful). Like Sonic Foundry’s Acoustic Mirror room modeler, Room Simulator lets you change response files while your sound continues to play. But Samplitude goes one better: you can also modify the effect’s parameters in real time, and your response files can be of any length. (For real-time use, Samplitude suggests that you keep the response files under three seconds, even on a fast computer.)

Samplitude also includes the highly regarded POW-r dithering algorithm for changing the bit depth of your audio from 24-bit to 16-bit resolution for CD burning.

NO OBJECTION

Samplitude’s newly renovated Object Editor is nonmodal, meaning it can remain on the screen while you continue to work on a project (see Fig. 3). What’s more, you don’t have to close the Editor and reopen it to tweak a different Object—just leave the Editor open and as you click on successive Objects, the Editor updates to represent the currently selected Object.

In addition to configuring custom fades in the Object Editor, you can adjust an Object’s gain and aux-send levels; add, remove, or edit an effects plug-in; and configure the dedicated EQ and Dynamics section. Every Object also has a Pitchshifting/Timestretching dialog that offers six modes tailored to different types of material. Among the new modes is a beat-slicing option that is intended for use with drum loops but can also be handy for pitched material. Samplitude does a good job of automatically detecting slice points, but you can also adjust them manually.



FIG. 2: The Parameter dialog provides access to as many as eight parameters at once. As you move the faders in the dialog display (bottom), automation curves appear in the track (top).

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2nd & 3rd chair Trumpet Section
1st through 3rd chair Trumpet Section

Trombones

1st chair Bass Trombone
1st & 2nd chair Tenor Trombones
1st through 3rd chair Trombone Section

Tuba

C Tuba
Eb Tuba

Articulation set includes:

Legato
Marcato Legato
Melodic Legato
Flutter Tones
Half Step Trills
Whole Step Trills
Staccato
Double Tongue "ta"
Double Tongue "ka"
Muted Legato
Muted Staccato
Muted Flutter Tones
Rips
Sforzando
Mute Sforzando
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Using any of the modes, you can stretch only within a range of one-half to two times the original length of the file or shift its pitch up or down by as many as 12 semitones. But when you consider that all of the settings in the Object Editor are nondestructive and adjustable in real time, those limitations seem reasonable.

MIDI MATTERS

Though you won't want to ditch your sequencer just yet, Samplitude 7.11 offers some new MIDI features that make it far more useful for working with MIDI data than previous versions were. One of these is a new interface for the MIDI Editor, with more ergonomic controls for zooming and scrolling. Velocity levels are now color-coded, and you can also import or export files directly from within the Editor. It's also easier now to change note lengths and positions.

You can also import MIDI files from the File menu and place them directly on an existing track or drag and drop a file from Windows Explorer. Because MIDI data is handled as Objects just like audio, double-clicking opens the Object Editor by default. But if you prefer, you can change that behavior to open the MIDI Editor instead. You can set a global fade time for a MIDI Object, adjust its start time or length, and change its overall Velocity. Because you can have data on more than one channel in a single Object, you can also determine whether changes you make are applied globally to all channels or only to individual channels.

HONE ON THE RANGE

Samplitude's flexibility is apparent in many areas of the program, especially in the handling of ranges. Once you have a range of audio selected, you can, for example, play the range, loop the range, play up to the start of the range, play from the end of the range to the end of the file, and play the entire file except for the highlighted

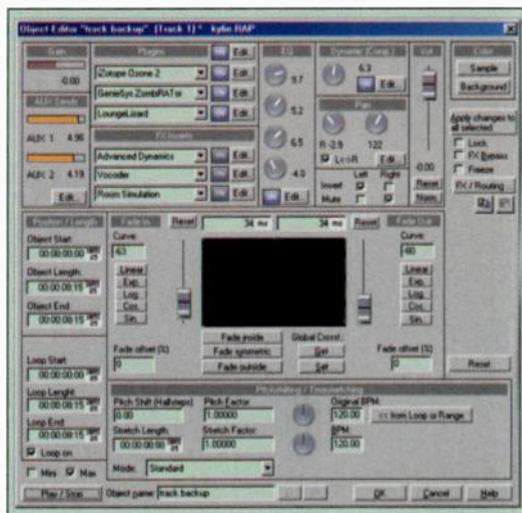


FIG. 3: Samplitude's Object Editor (shown here maximized) provides access to a large number of parameters that control segments of audio data on a track. A MIDI Object Editor provides similar functionality for MIDI data.

range. There's even an entire menu devoted to ranges that includes a Range Editor for adjusting the range's start, length, and end, and Samplitude also includes a variety of keyboard shortcuts that move the range's position in time. That's quite an assortment of options!

Similarly, the Mixer is highly configurable and can be designed to look and "feel" the way you want. Using the Project Mixer Setup window, you can determine how many tracks, submixes (up to 64), and aux-send buses (up to 64) appear onscreen, and the program lets you choose from five different preset mixer configurations (including 5.1 surround, stereo master, and multi I/O). Samplitude also offers complete flexibility when ordering real-time effects, and the program provides a huge number of routing options that allow you to place effects exactly where you want them on the signal path.

COMMAND PERFORMANCE

I tested Samplitude 7.11 on a Pentium III/1 GHz dual-processor computer running Windows 2000 SP3. My hardware included a MOTU 2408mkIII PCI audio interface and a MOTU MIDI Express, and I used the MOTU ASIO drivers exclusively. The program was very

responsive, and the non-real-time processing times were quite acceptable. I was able to run six stereo 16-bit, 48 kHz tracks with an effects plug-in on every track, at least one additional plug-in effect on all of the individual Objects, insert effects on two channels, one Master effect, lots of pan and volume automation, and a scrolling video track. With all of that going on I could still tweak settings and move faders and knobs without a glitch in playback.

Samplitude's manual is available both in hard copy and as a PDF file, and it's very thorough, although some of the graphics in the manual and in the on-line help don't match the current user interface (the Mixer Setup dialog, for example). In addition, an occasional German word has snuck into the English version. The manual contains several excellent beginning tutorials that are enhanced by video tutorials on the distribution CD. A lively forum at the Magix Web site will put you in touch with other users, and a very aggressive release schedule ensures that you'll get ongoing and regular program updates.

DO YOU FOLLOW?

Samplitude has always been one of the most powerful multitrack audio editors on the PC. Yet surprisingly, it hasn't had the following it deserves. Though not every feature is where you might expect to find it—the feature to import a video file is buried deep within the Options/Project Properties/Media Link menu, for example—Samplitude has definitely come a long way in terms of usability. And because

you can customize so much of its interface, you can give it a look and feel that suits your working style.

If you're searching for a multitrack editor that can perform nearly any type of editing, mixing, mastering, composing, or sound-design process, give Samplitude Professional a try. A save-disabled demo at the Samplitude Web site is a good place to start.

Dennis Miller is an associate editor of EM.

PRODUCT SUMMARY

Magix

Samplitude Professional 7.11

multitrack audio editor

\$1,250

upgrade from Samplitude 2496 6.0

\$250

FEATURES	4.5
EASE OF USE	4.0
DOCUMENTATION	4.5
VALUE	4.0

RATING PRODUCTS FROM 1 TO 5

PROS: Huge range of included effects. Highly configurable. Improved audio engine.

CONS: Some features buried deep in menus. MIDI features limited.

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Home Recording - Dec 2002

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MDX Magazine - May 2003

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ARTURIA

MOOG MODULAR V 1.1 (MAC/WIN)



*If you want to
know what it was really
like, start here.*

By Len Sasso

There's been so much buzz about Arturia's software emulation of the classic Moog Modular synthesizer that I'll get straight to the big question: is it the real deal? The answer, as you might expect, is yes and no.

Arturia's Moog Modular V has a complement of modules typical of a midpriced hardware modular system from Moog, though not the exact configuration of any of the standard modular packages. Each type of module resembles an original Moog piece but is not an exact replica.

The patching scheme is also very much like the original, but with two major enhancements: each control input jack has a built-in bipolar level

control, and you can connect any output to multiple inputs. Modern-day conveniences, such as delay and chorus effects, MIDI implementation (including Velocity sensitivity), the ability to save and recall patches, and polyphony have been added.

You can get Moog Modular V to sound a lot like its hardware predecessor, but you can't exactly recreate every sound the original Moog makes. On the other hand, you can get lots of sounds from Moog Modular V that you can't get from the original. (For a head-to-head comparison, see the sidebar "Hearing Is Believing.")

NOTES AND SPECS

The Moog Modular V comes in a standalone version as well as several plug-in formats: VST, RTAS, HTDM, and Audio Units for the Mac; and VST, RTAS, and DXi for Windows. (Standalone operation is not implemented for Mac OS 9.) Although the minimum requirements call for a 500 MHz Pentium II or Mac G3, you'll need a considerably faster processor to play complex polyphonic patches. For this review, I tested the standalone, VST, and Audio Units versions on a PowerBook G4/800 MHz, and I easily pushed the CPU meter over the top by playing four voices of a com-

Minimum System Requirements

Moog Modular V 1.1

MAC: G3/500 MHz; 128 MB RAM;
Mac OS 9.1 (operates as a standalone
instrument in OS X 10.2)

PC: Pentium II/500 MHz; 128 MB RAM;
Windows 95/98/2000/ME/XP

plex patch. When that happens, the signal breaks up and you lose control of the front panel. However, things settle down in a few moments and you're back in business. Remarkably, I had very few crashes or serious failures.

Moog Modular V ships with a printed manual—130 pages in each of three languages—and more than 400 factory patches from eight sound designers experienced in using modular synths. The assortment of patches is outstanding and covers most anything you'd want to do with a modular synth. Also included is a bank of 60 template patches, which provides a great launchpad for sound exploration.

The manual contains a brief history of Moog modular instruments as well as sections on general operational concepts, the individual modules, the basics of subtractive synthesis, and sound-design tutorials. Unfortunately, the individual modules are very poorly described—some of the inputs, outputs, and control descriptions are incomprehensible or just plain incorrect. However, the other sections of the manual are quite helpful. Modular synthesis is a complex business, but the examples and documentation provided by Arturia will definitely get you up and running.

YOU'VE GOT THE LOOK

The Moog Modular V's modules are revealed in two main views, creatively labeled the First View and the Second View. The First View consists of two virtual cabinets filled with the sound-design modules—oscillators, filters, amplifiers, envelopes, LFOs, and assorted ancillary modules (see Fig. 1). The Second View consists of two more cabinets containing a step sequencer; delay, chorus, and multiband-filter effects; a keyboard with



FIG. 1: The First View control panel of Modular V contains all the sound-design modules. Color-coded cables make patch analysis easier, but cable display can be suppressed, and all patching can be done without cables.

STRIKE SONIC GOLD.



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keyboard-setup controls; and quick-access controls for several modules in the First View (see Fig. 2). There is also a more compact Third View that shows only the keyboard and quick-access controls of the Second View. Only one view can be displayed at a time, but all cabling is done in the First View so a lot of switching is not necessary. It would be nice to have key commands for changing views, but these are not provided.

The color-coded cabling scheme is quite clever. Three colors of cables distinguish audio sources—red from oscillators, yellow from filters, and blue from amplifiers. Two additional colors distinguish control sources—green from envelopes and LFOs and white from everything else. You can suppress cables of any combination of colors, and you can control the cables' virtual tension (how much they sag) as well as whether they move out of the way when approached by the cursor.

You make connections by clicking on any output or input jack and dragging to a destination. The appropriate destinations sprout yellow rectangles as soon as you begin to draw a cable, which is something you won't find in a hardware synth!



FIG. 2: The Second View control panel of Modular V contains all the keyboard and MIDI routing, the step sequencer, and the Fixed Filter Bank, Dual Delay, and Chorus effects.

You can also make and break connections using context menus that pop up when you right-click (Control-click on the Mac) on any input or output jack. Trigger connections, indicated by jacks with two flat vertical slots, can only be made by menu. Last, there are scrolling digital selectors for keyboard, MIDI,

and sequencer connections to the oscillators and filters, although jacks for routing those sources to other destinations are also available. If you prefer, you can patch any source to any destination on the Moog Modular V without ever drawing or viewing a cable.

MODULE TO MODULE

Moog Modular V's nine oscillators are modeled after the Moog 921a Oscillator Driver/921b Oscillator configuration. In this case, each of the three 921a drivers controls three 921b oscillators. Frequency and pulse-width modulation inputs are provided, but at the moment, no linear FM input is available, making typical enveloped FM operators impossible. (Arturia plans to add linear FM in a future release.) As in the originals, each oscillator has simultaneously available sine, triangle, sawtooth, and pulse outputs, and any oscillator can be hard- or soft-synced to any other. White- and pink-noise generators round out the complement of sound sources.

Each of the Moog Modular V's three filter modules has four configurations: lowpass; highpass; Filter Coupler filters modeled after the Moog 904 series; and a resonant multimode filter not available in the original Moog line. Additional filters include 6 dB-per-octave highpass and lowpass filters built in to the noise-source

HEARING IS BELIEVING

As a long-time owner of an original set of Moog modules, I was interested to hear a side-by-side comparison of Arturia's Moog Modular V to the real thing. Moog Modular V makes a decent attempt at re-creating the raw tone of the hardware instrument, but it exhibits some major differences.

To begin with, the 921b oscillators in Moog Modular V sound as though they always start from the same phase point. To hear this, slightly detune two oscillators and re-strike the same bass note while listening to the sawtooth outputs. Unless there is a free-run function in Moog Modular V that I'm not aware of, the oscillator phase definitely restarts upon each key-strike, which produces a 100 percent predictable detuning character on each note. The original Moog oscillators don't do this.

With the filter wide open, Moog

Modular V oscillators exhibit a slightly nasal and forward midrange and a bit more upper-mid bass. The Moog oscillators are sweeter-sounding, with the expected very high harmonic content providing "air" and whisper, which is important in long filter sweeps.

Moog Modular V's oscillators track. The Moog's don't. Moog Modular V's oscillators don't drift. The Moog's do.

The original Moog filter also sounds sweeter than the Moog Modular V filter near and in self-oscillation. When it self-oscillates, the Moog Modular V filter whistles too strongly at low frequencies and doesn't blend with the oscillators. Instead, it sounds like a separately mixed sine wave. Also, the real Moog filter drifts, which became obvious when I created the same sound on both instruments simultaneously.

—Mike Peake

PRODUCT SUMMARY

Arturia

Moog Modular V 1.1 (Mac/Win)
software synthesizer
\$329

FEATURES	4.5
EASE OF USE	3.5
QUALITY OF SOUNDS	4.0
VALUE	4.0

RATING PRODUCTS FROM 1 TO 5

PROS: Authentic hardware look and feel. Excellent factory library of patches. Lots of creative potential.

CONS: No linear FM inputs. Some calibrations are off. CPU intensive.

Manufacturer

Arturia
e-mail info@arturia.com
Web www.arturia.com

module and an emulation of the Moog 914 Filterbank, with nine variable-Q bands, in the Seq/FX panel.

Control modules include two multi-waveform LFOs, six ADSR envelope generators, and an additional ADSR envelope built into each of the two output amplifiers. The LFOs are quite flexible, and they include built-in delay and fade-in controls as well as inputs for frequency and pulse-width modulation. The envelope generators are modeled after the Moog 911 envelopes. The attack, decay, and release ramps are highly exponential: their knobs are calibrated to show the time it takes to reach half the target value, which makes them somewhat hard to set intelligently. (A setting of 1 second, for example, results in a ramp time of over 4.5 seconds.)

In addition to two output amplifiers with their own ADSR envelopes, there is a mixer module with 16 amplifiers that can be ganged together in any combination to form submixers. Each amplifier has its own control input, and control signals as well as audio signals can be passed through them to allow control-signal modulation. For example, you could use that to control the level of one LFO by an envelope, another LFO, or MIDI Velocity.

KEYED UP AND STEPPIN' OUT

Notes, whether from MIDI or the on-screen keyboard, are routed through four separate keyboard followers. Each keyboard follower gives you independent control of the key range within which triggers are sent, of scaling, of the threshold at which tracking begins, and of an offset. You can, for example, split the keyboard into separate or overlapping zones, create alternate tunings by changing the scaling, and transpose the keyboard using the offset.

The Sequencer module is modeled on the Moog 960 step sequencer, but with some additions. It has three rows of eight steps, each with its own output. A fourth output allows the rows to be linked in various ways—for example, in series, in alternating steps, or randomly. Each step can be set to repeat up to eight times with or without retriggering or be linked to the previous step for a legato effect. Furthermore, for each step, you can select the next step, which can be any other step, a step selected at random, or no step (stop). There's a built-in clock, a trigger input for stepping the sequencer, and individual trigger inputs for selecting each step. In short, you can get very creative with triggering and output configurations, and the sequencer is not limited to sequencing notes—you can route the outputs to any control input. The MP3 file SongV (see [Web Clip 1](#)) is an example of what the Sequencer module can do, and it shows the variety of sounds possible from Moog Modular V.

VIRTUAL REALITY

Although not an absolutely authentic reproduction of its hardware namesake in terms of design and sound, Moog Modular V is a very powerful modular software synthesizer in its own right. It succeeds in capturing the look and feel of the original Moog instruments, while adding many modern conveniences that can't be provided in hardware. Most important, Moog Modular V sounds great and gives you the experience and sounds of a hardware modular system at a fraction of the cost of a vintage instrument.

Len Sasso can be contacted through his Web site at www.swiftkick.com.

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DIGIDESIGN

PRO TOOLS 6.1 (MAC/WIN)

An updated look and new features make a big difference.

By Nick Peck

Unlike previous major upgrades of Digidesign Pro Tools, version 6 offers significant improvements rather than a radical overhaul of the feature set. Nonetheless, many of the changes are welcome, and in the case of Pro Tools LE, many are long overdue.

On the Mac, the *raison d'être* of Pro Tools 6 is the program's migration to OS X (in particular, OS X 10.2.6). Windows XP was the operating system of choice for Pro Tools 5.1 on the PC, and its stability on that platform has greatly increased with this update.

The most obvious change is in the

program's GUI: Digidesign has given the program a face-lift, and Pro Tools now looks almost identical on both platforms (see Fig. 1). All of the buttons have a 3-D beveled look, and audio-region backgrounds are colored, which helps them stand out even better. This new design is a welcome improvement, especially in the Mix window, but there is far more to this upgrade than a prettier face.

DATABASING DIGI-STYLE

One of the most significant additions to Pro Tools 6 is Digibase (see Fig. 2). This powerful audio database allows you to view, sort, and audition all of the sound files on your hard drives directly within Pro Tools using a file-browser window. Waveforms are displayed for each sound file, and selected files can be dragged and dropped into the current session.

Pro Tools 6 TDM includes Digibase Pro, which adds catalogs: user-definable groupings of sound files that can span multiple volumes. Primarily aimed toward post-production, catalogs can be used to collect and organize sounds under categories—footsteps, gunshots,

Minimum System Requirements

Pro Tools 6.1

MAC: G4/350 MHz; 512 MB RAM (1,024 MB recommended); Mac OS X 10.2.6

PC: Pentium III/450 MHz; 512 MB RAM (1,024 MB recommended); Windows XP

or birdcalls, for example—making them easily accessible to your session.

The Task window shows the status of background tasks, such as sound-file copying. In addition, Tasks can be re-prioritized and cancelled while in progress.

SIGNIFICANT OTHERS

On the Mac side, Pro Tools 6's most important MIDI enhancement is support of Apple's CoreMIDI services. Say goodbye to reliance on the long-defunct OMS standard. Additional MIDI improvements include support for MIDI time stamping for more accurate MIDI timing, groove quantization of MIDI tracks, and the ability to draw notes and controller data with the Pencil tool. Pro Tools 6 also supports four virtual MIDI inputs that allow you to connect supported third-party applications such as Ableton Live.

Significantly, version 6.1 adds support for Propellerhead ReWire, a cross-application audio/MIDI streaming standard that allows any ReWire-compatible application to connect seamlessly with Pro Tools. ReWire sends audio data directly into Pro Tools tracks and out of your Digidesign interface, mixed with any audio data you might have in Pro Tools itself. Transport and location commands are shared between applications, and either program can act as the master. I started up Pro Tools and Propellerhead Reason, routed Reason's outputs into Pro Tools inputs, and within moments I was operating both programs together smoothly. The faster your CPU, the better your experience will be using multiple applications with ReWire.

Digidesign improved the Import Session Data window: it now gives you finer control over which parameters of a source session should be imported into



FIG. 1: The graphics in Pro Tools 6.1 have been spruced up for Mac OS X, and the look of the GUI is similar on both platforms.

"She's A Replicant."

(Blade Runner, Motion Picture)



"I just sold my Yamaha GX1 because I have a great replacement with Arturia's CS-80 V. The CS-80 is one of the few synthesizers that can integrate perfectly into an orchestral and acoustic landscape, and I've used it on anything from "Rainman" to "Gladiator". On "Black Hawk Down", it became the only instrument that could successfully compete with the barrage of gunshots and explosions, since its sound is never static and always animated, constantly shifting."

Hans Zimmer, Composer

CS-80V

"The mighty CS-80 lives again! I bought the first CS-80 in England and featured it heavily on all three "UK" albums and on recordings and world tours with "Jethro Tull". With the CS-80 V, Arturia have done a fantastic job of both replicating this classic instrument and adding new features and extensive programmability. I am pleased to once again have easy access to its unique and powerful sounds and can't wait to feature it again on my future recordings and film work."

Eddie Jobson (Roxy Music, Zappa, UK, Jethro Tull)



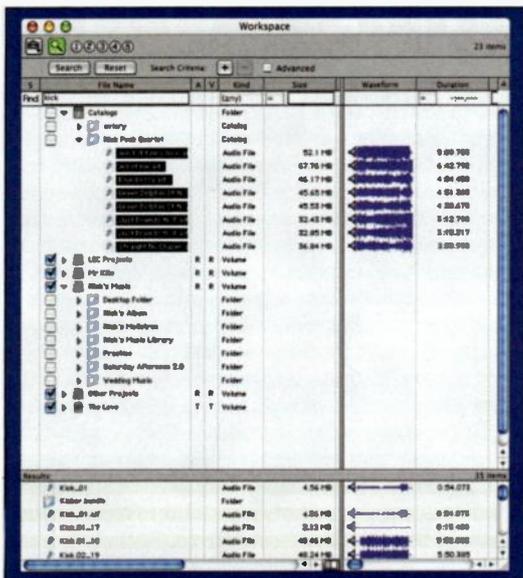


FIG. 2: Digibase offers comprehensive audio-file browsing and auditioning within Pro Tools 6.1.

the current session. Each track can be imported as a new track or into an existing track in the target session. Virtually every source-track parameter—from track comments to plug-in assignments to automation data—can be imported or ignored.

The Session Setup window has been streamlined, and it defaults to show only the most commonly needed settings. Synchronization and time-code settings are now window options that drop down when selected.

In the “nice touches that were a long time coming” category, the Selector tool can now select audio across multiple tracks when you move the mouse vertically. This simple enhancement is a real time-saver for multitrack editing.

In earlier versions of Pro Tools, click tracks could be generated only by using external MIDI sound modules. The new Click plug-in (see Fig. 3) creates audio pulses, allowing you to specify accented and unaccented levels. In addition, you have 11 sounds to choose from for the click.

Beat Detective can now create groove templates from a percussive performance. Groove templates can be saved to the clipboard or disk and applied to other audio or MIDI material. Pro Tools 6 comes with a hefty load of groove templates to get you started.

NEW TO PRO TOOLS LE

A number of excellent features that were previously available only in the TDM version have been added to Pro Tools LE. To begin with, the program can now handle 32 simultaneous tracks of audio. Audio tracks can be made inactive, allowing 128 audio tracks to exist in a session, with 32 of them active at a time. In addition, Pro Tools LE supports 128 auxiliary inputs, 64 master faders, and 256 MIDI tracks—practically enough to record a Queen album.

The Time Trim tool has also been brought in from Pro Tools TDM. This tool gives you the ability to time-compress or -expand a region on the fly to fit a specified length.

Command Focus mode lets you assign your favorite everyday editing commands to single keystrokes on the keyboard. Once memorized, these keystrokes increase your efficiency enormously. This feature greatly narrows the gap in functionality between the TDM and LE versions of the software.

The gap is narrowed further with the introduction of the DV Toolkit option (\$795) for Pro Tools LE 6.1, making film and video post-production possible on LE systems for the first time. The DV Toolkit option lets you work in SMPPro ToolsE timecode and the feet.frames format. Audio and video pull-up/pull-down is also supported. This welcome addition means sound editors can now use a Digi 002, for example, instead of a full-fledged TDM system, allowing the post-production world to get in the door for substantially less money.

ILOK PROTECTION

In an attempt to stamp out plug-in piracy, Digidesign has adopted the iLok system, which requires a USB dongle. All plug-ins and software enhancements created or distributed by Digidesign or by its development partners will require an iLok in order to run. Users must create an account at www.ilok.com to manage their plug-ins.

Like any copy-protection system, iLok has its strengths and weaknesses. For example, having a third party company act as an intermediary between users and manufacturers means additional

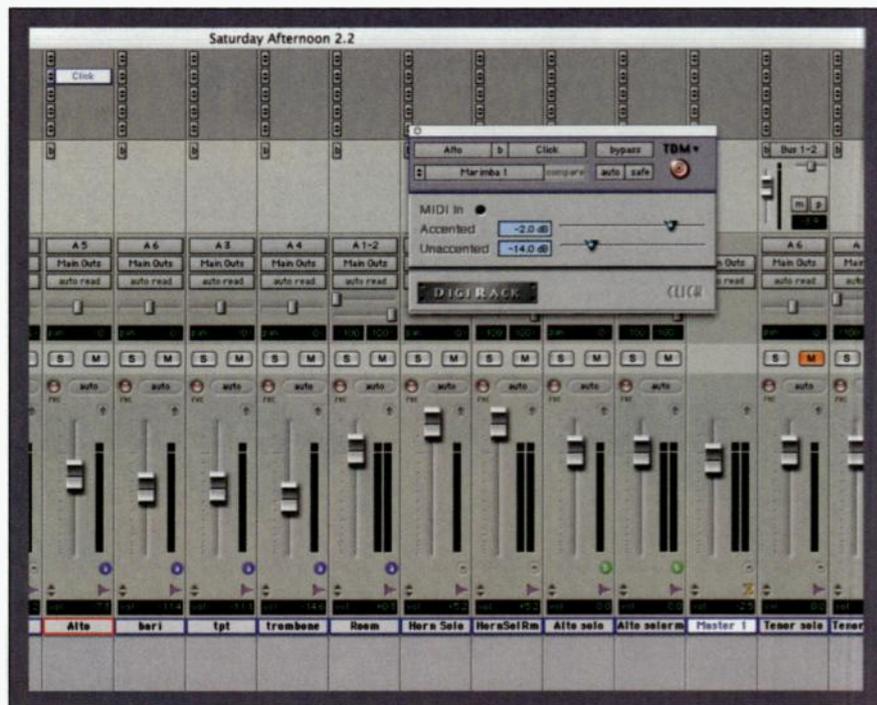


FIG. 3: Sometimes it's the little things: the Click plug-in makes an everyday task easier.

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bureaucracy and hassle. On the other hand, the iLok dongle holds authorizations for up to 100 plug-ins, and it allows freelance users to take their authorizations with them to work on multiple systems.

PREPARING TO UPGRADE

If you are running Pro Tools 6 in OS X, be sure to upgrade to version 10.2.6 (or later) before installing Pro Tools. Also, make sure that your computer is up to snuff. When I used Pro Tools 6 LE with my Mbox on an Mac iBook laptop, the performance was a bit slow and cumbersome. The reason is that G3 processors don't run OS X as well as G4 processors do. Nonetheless, Pro Tools 6 LE worked properly in that situation, and version 6.1 LE was considerably more stable on this machine than version 6.0.

I tested Pro Tools 6.0 TDM on a dual Power Mac G4/867 MHz (Mirrored Drive Door), with an HD 3 system and a

Pro Tools 6.1 Specifications	
Audio Tracks	128 (192 with the Accel card)
MIDI Tracks	256
Buses	64
Sends Per Track	5
Inserts Per Track	5
Sequencer Resolution	960,000 ppqn, synced to internal or MIDI Clock source
Sampling Resolution	16-bit, 24-bit (selectable)
Sampling Frequency	192 kHz max.
Quantization	whole note to 64th-note triplet

Digidesign 192 I/O. The main issue I had was an intermittent problem with nasty distortion when I returned to zero in a session. (Playing back a session from the middle resulted in proper output.) These problems disappeared when I installed the Pro Tools TDM 6.0.1 patch, and version 6.1 has been glitch-free.

Additionally, be sure to take into account the upgrade costs for your plug-ins. Most of Digidesign's development partners have released Pro Tools 6.1-compatible versions, but these manufacturers may charge separate upgrade fees for their plug-ins.

THIS JUST IN

As this review was going to press, Digidesign released the 6.1.1 and 6.2 updates. Unfortunately, neither update arrived in time for me to use them in this review. Version 6.1.1 added updated CoreAudio, ASIO, and WAV drivers to the program, allowing third-party software to communicate with Pro Tools hardware. In fact, with these drivers installed, you can use Emagic Logic, Steinberg Cubase SX, and other digital audio sequencers as the front end to your Pro Tools hardware without ever having to launch your Pro Tools software. Another added feature is the ability to import and export Windows Media Audio 9 and Windows Media Audio 9 Pro files on Windows XP systems.

Along with version 6.2, Digidesign has released the Pro Tools|HD Accel card, which offers a nearly two-fold in-

crease in processing power over the HD Process card. The Accel card can be added to any Pro Tools|HD system, and Digidesign says it can work along with HD Process cards. However, users will need to update their plug-ins to run on the Accel card (the existing HD plug-ins will still run on the HD Core card). Pro Tools 6.2 also adds support for the 96i I/O audio interface.

ADMIT ONE

The version 6 update provides some much-needed improvements to Pro Tools, such as the ability to instantiate TDM plug-ins on the fly during playback, the ability to select audio over multiple tracks, and the Click plug-in. The Pro Tools MIDI toolbox is ever expanding, and Digidesign is working hard to make it easier to link Pro Tools with third-party applications by introducing ReWire support and alternative drivers for its hardware.

Any user working with large numbers of files will find the addition of Digibase to the program a real bonus. And LE users will enjoy the increased track count, the DV Toolkit option, the Time Trim tool, and the Command Focus mode. All of this, combined with the migration to Mac OS X and the increased stability in Windows XP, makes the upgrade to Pro Tools 6.1 worth the price of admission.

Nick Peck plays music, records music, teaches music, and writes about music. You can contact him at nick@perceptivesound.com. His Web site is www.underthetree.com.

PRODUCT SUMMARY

Digidesign
 Pro Tools 6.1 (Mac/Win)
 digital audio workstation
 TDM upgrade \$195
 LE upgrade \$75
 upgrades from version 6.0 free

FEATURES	3.0
EASE OF USE	3.0
DOCUMENTATION	4.0
VALUE	3.5

RATING PRODUCTS FROM 1 TO 5

PROS: Mac OS X and Windows XP compatibility. Updated GUI. Digibase database system. Addition of virtual tracks to Pro Tools LE. Addition of Command Focus mode to Pro Tools LE. ReWire support.

CONS: No Audio Units support. LE lacks surround sound and Beat Detective. Minimal MIDI implementation compared with other DAW software.

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Quick Picks

FMR AUDIO

RNP 8380 Really Nice Preamp

By Myles Boisen

Without high-profile marketing, a sexy image, or slick product designs, how can a little audio company hope to survive these days? In the case of FMR Audio, the answer is simple; make a compact 2-channel, Class-A mic preamp and get it to engineers who are in-the-know for less than \$500. Like FMR Audio's first product, the Really Nice Compressor (RNC), the RNP 8380 Really Nice Preamp (\$499) has been largely a word-of-mouth success story based on audio-newsgroup raves. So what's the buzz all about?

Good Things Come in Small Packages

For a 1/2U box, the RNP 8380 is packed with useful features. Each of its two solid-state channels is independently controlled and offers a front-panel 1/4-inch DI input, a polarity inversion (phase reverse) switch, +48V phantom power with indicator, and a three-LED (signal present/+18 dBu/clipping) gain display. The gain control is a precision 12-position Grayhill switch, ranged in 6 dB steps from 0 dB to a hefty 66 dB.

The rear-mounted connections are XLR mic inputs, 1/4-inch TRS insert jacks, and 1/4-inch TRS +4 dBu output jacks for each channel. Other "really nice" touches include Class-A amplification circuits chosen for low distortion and high output

(+28 dBu), automatic output muting during phantom or mic/DI switching, and the ability to operate with balanced and unbalanced devices.

The unit's shortcomings—cheerfully divulged by designer Mark McQuilken in the humorous manual—are mostly cost-cutting measures, such as the wall-wart power supply. McQuilken also admits to a higher-than-average noise floor for the unit (-120 EIN), but states accurately that this spec is of consequence only for lab measurement, because the RNP 8380 is still much quieter than many sought-after preamps. The unit also runs very hot, but it doesn't pose any safety concerns.

The only real gripes I have with the RNP's design are that 6 dB steps in gain is fairly large and that there is no trim control for matching levels between the two channels. Given the unit's suitability for live and location recording, that is a disadvantage when one channel needs a minor adjustment in order to provide a balanced stereo image into a converter or tape machine. Of course, subtle level adjustments can be made by patching a device with a continuously variable gain control (such as the RNC) into the inserts or by feeding the signals to a mixing board or DAW before you record.

On the Job

Here at Guerrilla Recording in Oakland, California, engineer Bart Thurber and I became enthusiastic users of the RNP. In comparing notes, we discovered our mutual appreciation of this preamp's features, ease of use, and honest fidelity. In particular, Thurber applauded the RNP's muting protection and the inserts for routing signals to an outboard compressor or other device. He was especially pleased

with the way the RNP 8380 warmed up the sound of his favorite vocal mic, an Oktava 219. Thurber also raved about the preamp for use on 2-channel electric-bass tracks, in which you are simultaneously miking the amp and using a DI—listing the RNP's full low end and its phase-reverse capability as major selling points.

In a series of loudspeaker listening tests, I used a single microphone in front of a monitor to feed the RNP 8380 and some of my favorite solid-state preamps. The RNP 8380 and a single-channel Grace 101 preamp were closely matched in these listening evaluations. At times, I heard the RNP 8380 as being a bit warmer, but on most music selections the sonic differences between the two were indistinguishable to my ear.

The RNP 8380 was sonically similar to the Langevin Dual Vocal Combo 2-channel preamp as well. I did notice a cleaner, more hi-fi quality to the high end through the RNP, as well as a more even, prominent reproduction of bass notes.

After using it on several sessions of my own, I found the RNP 8380 to be an excellent all-purpose preamp, providing unhyped clarity without artificially glossing the high end. The minimal yet intelligently designed signal path makes this preamp one that seems to open up any mic you put through it. I was impressed by the RNP's ability to extract an extra measure of realism and detail in ambient room mics, as well as its smooth handling of close-miked sources.

Give It to Me Straight

The ultimate compliment for FMR Audio is that it has found a way to make top-quality products affordable, without compromising on the essentials. Underneath its utilitarian, no-frills appearance, the RNP 8380 is an impressively transparent, straight-wire-with-gain-type of preamp, and one of the best bargains I've seen in years.

Overall EM Rating: (1 through 5): 4

FMR Audio; tel. (512) 280-6557; e-mail mark@fmrudio.com; Web www.fmrudio.com



The FMR Audio RNP 8380 fits a lot of features, such as front-panel instrument inputs, a phase-reverse switch, and a phantom-power switch, into a 1/2U device.

METASONIX

TM-3 Gas-Tube Dual VCO with Suboctave

By Gino Robair

No other synthesizer manufacturer exploits the limits of tube technology the way Metasonix does. The company's founder, Eric Barbour, revels in finding untapped tube resources that challenge the musician in ways few products do these

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WE SHIP WORLDWIDE



The Metasonix TM-3 is a tube-based dual VCO with a rich sound that can be used to create unique synth textures.

days. The TM-3 Gas-Tube Dual VCO with Suboctave (\$399; \$549 with MIDI) is no exception.

The TM-3 uses two parallel-wired 2D21 (or 5727) thyratron tubes as oscillators. The resulting waveform is a warped sawtooth that sounds beefy, especially when filtering and shaping are added. In addition, the oscillator 2 signal is fed into a bistable multivibrator, which yields a suboctave square wave at half the input frequency. An artifact of this scheme is a pulsing sound, pitched two octaves *above* the input frequency, that can be used to add LFO-like modulation in the oscillator's midrange. Together, these features add up to a big, albeit unusual, sound.

Metamojo

The TM-3's front panel has a tuning control for each of the oscillators, a suboctave level control, the Suboctave Stability control, and an output level control. The basic version of the module has three ¼-inch jacks: an audio output and a pair of CV inputs. You can run audio-rate signals into the CV inputs to get a range of distorted timbres.

The TM-3 includes a soft-sync switch, which helps oscillator 2 track a little closer to oscillator 1. A pilot lamp, visible through the top-panel window, offers visual feedback by flickering in time with the super-octave pulses.

An optional MIDI input port—a Synhouse MIDIJack II—is available; it includes a side-mounted Channel/reset switch and a ¼-inch gate output. I highly recommend adding the MIDI option, because the TM-3 uses the V/Hz (linear) voltage-control system rather

than the typical V/octave (logarithmic) system. Unless you plan to interface the TM-3 with one of the few classic synths that adhere to the V/Hz standard—the Korg MS-series and Yamaha CS-series synths come to mind—spring for the MIDI'd TM-3.

Using the CV input, the TM-3 has a three-octave frequency range—roughly 66 to 528 Hz—making it suitable for use as a bass synth, for midrange lead

work, or for effects. MIDI control gives the synth a range of about two octaves and a major sixth.

Ghosts in the Machine

When controlling the TM-3 with MIDI, you can use the signal from the Gate output to drive other analog modules, such as an envelope generator. To get a sense of how the TM-3 sounds and behaves in a conventional setting, I ran its audio output in to the filters of a Moog Music Minimoog Voyager. Using the Voyager's filter EGs and onboard mixer, I was able to shape and blend the TM-3, adding extra warmth and punch to the Voyager's presets. I had to retune the TM-3's VCOs for each octave I planned to play in, though, because the tube oscillators track unevenly, even with the sync switch engaged.

However, it's this unpredictability that makes the TM-3 interesting. When you set the Suboctave Stability control to maximum and play the TM-3 with a MIDI controller, for example, you may get FM-like timbres or perhaps a bit of added clicking on one or two notes. Play a note above or below, and the strangeness disappears.

I found a host of other artifacts as well. As you tune one oscillator up about a major third, the other oscillator lowers incrementally in pitch—a usable effect when the TM-3 is part of a complex, evolving patch. Flip the Sync switch, and the oscillators will go up a half step in pitch. And, when you use MIDI to control the TM-3, an expression pedal plugged into one of the CV inputs can change the pitch of the oscillators up a minor third.

Like all Metasonix products, the TM-3 in-

tegrates well with analog modules from other manufacturers. Mounting hardware (\$40) is available for installing it in 3U Euro-rack (Analogue Solutions, Analogue Systems, Blacet, and Doepfer) and 5U (MOTM and Synthesizers.com) systems.

Bold Buy

The TM-3 is a useful addition to the Metasonix line, although its price puts it at the upper end of analog VCO modules. However, no other company makes a tube-based VCO, let alone a dual-tube VCO with an added suboctave.

Used with the TM-1 Vacuum-Tube Waveshaper and Ring Modulator and the TM-2 Vacuum-Tube Bandpass Filter and VCA, the TM-3 can create sounds that are downright dangerous. No matter how it is used, the TM-3 is not for the timid.

Overall EM Rating (1 through 5): 3.5

Metasonix; tel. (707) 263-5343; e-mail synth@metasonix.com; Web www.metasonix.com

KENTON

Spin Doctor

By Kerry Rose

Kenton's Spin Doctor (\$199) is a compact MIDI control surface that's designed to work with virtually any type of MIDI gear, including synths, effects processors, sequencers, virtual instruments, and more. For Kenton, the Spin Doctor represents a lower-priced alternative to its Control Freak line.

Unlike many control surfaces, (including two of the three Control Freak models), the Spin Doctor is based around knobs rather than sliders. It has 16 programmable rubber knobs, an edit button, a function key, a data entry knob, and a scrolling 4-character LED display. Rear-panel connections include a 9 VDC power input for the unit's external power supply, and MIDI In and Out ports. A printed manual is included in the box.

The Hookup

Setup was easy. After plugging in the power supply, I patched the MIDI In and Out to the proper connections on my computer's MIDI interface, and I was ready to roll.



The Kenton Spin Doctor is a MIDI control surface with 16 programmable knobs.

The Spin Doctor comes loaded with six generic factory profiles. (Profiles are pre-programmed patches that configure the Spin Doctor to control particular MIDI parameters and specific pieces of MIDI gear.) Program 0 sets up the unit to control volumes on MIDI channels 1 through 16, program 1 gives you pans on channels 1 through 16, and the other four preloaded profiles let you control various banks of 16 MIDI continuous controllers.

The Setup

You can do some editing and customizing of profiles using the controls on the unit itself, including changing continuous controller assignments. But to get the most from the Spin Doctor, you'll want to use it with one of the free software editors (for Mac or PC) that are available for download at the company's Web site, www.kentonuk.com. (There you can also download profiles for a variety of MIDI devices and check to see if there are profiles for the gear you use.)

The PC editor, called Virtual Spin Doctor, is based on a visual representation of the unit and is quite intuitive. To assign a parameter, you click on a virtual knob and select from a pull-down menu. A full range of MIDI commands, including SysEx, non-registered parameter numbers (NRPNs), MIDI channel, range, and so on are available for editing. You can also label the virtual knobs to keep yourself organized.

The Mac editor, called Control Freak Studio Edition Editor, is actually a generic Control Freak editor that's also compatible with the Spin Doctor. It has the same

functionality as the PC editor but isn't as pretty or intuitive. It supports Mac OS 9 but not OS X, and, regrettably, requires that you use OMS. (According to Kenton, an OS X compatible version of the editor should be available by the time this issue goes to press.)

After installing the software and struggling with its spare documentation, I succeeded in loading a profile for Digidesign Pro Tools. When I began turning the Spin Doctor's knobs, however, nothing seemed to happen. I soon realized that I had to cross the "null" point of the onscreen fader (meaning that my hardware knob value had to catch up with that of the corresponding virtual fader) before a knob would become active. After that, however, I was up and running and using the Spin Doctor's knobs to control 16 Pro Tools tracks.

I also tested the Spin Doctor with Propellerhead Reason, using Control Freak Studio Edition Editor to load profiles for the Subtractor synth and the NN-19 sampler. After tweaking Reason's MIDI preferences a bit, I was happily adjusting filter frequencies, amplitude envelopes, and other parameters in real time.

It should be noted that you can also load profiles, which come in the form of standard MIDI files, directly from a sequencer or editor-librarian into the Spin Doctor without having to use the software editor.

The Wrap-up

The solidly built Kenton Spin Doctor offers extensive control at a reasonable price. Yes, I wish the Mac software editor had better documentation and a more in-

tuitive interface, but overall I was impressed with the Spin Doctor's design and performance. If you could use a Doctor in your house, I encourage you to take this one for a spin.

Overall EM Rating (1 through 5): 3.5

Kenton Electronics/Big City Music (distributor); (818) 985-0855; e-mail sales@kenton.co.uk; Web www.kenton.co.uk

NATIVE INSTRUMENTS

Absynth 2 (Mac/Win)

By Jim Aikin

.....

It's a grand time to own a fast computer. Every month, it seems, I fall in love with a new software synthesizer, and this month it's Native Instruments Absynth 2 (\$299). The first version (a 2002 EM Editors' Choice winner) was packed with great features and produced hair-raising sounds. Version 2 is no mere face-lift; its programmers have outdone themselves. Absynth is not multitimbral, but it is cross-platform and runs either standalone or as a VSTi or DXi plug-in. It supports ASIO, CoreAudio, DirectSound, MME, and Sound Manager.



Calling Absynth a 3-oscillator synth is like calling a Porsche a 4-wheel vehicle—true but not very informative. Each oscillator can operate in dual mode for detuning or FM purposes, and each has its own filter and waveshaper to further sculpt or mangle the tone. The three signal paths are then mixed and fed into another waveshaper and filter, which can be monophonic or polyphonic.

Although Absynth does conventional leads and pads quite nicely, you can use its 68-stage synchronizable looping envelopes to create complex rhythms. You can control almost anything with as many envelopes as you need. Three LFOs provide additional tone shaping, and you can apply keyboard scaling to any parameter with pinpoint control over each key. You can draw single-cycle waves and hear the results while sustaining a note. Real-time MIDI control is well implemented, too.

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- Sing tones directly from memory
- Hear sheet music mentally—in correct pitch

- Identify KEYS of songs by ear alone
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Quick Picks

New and Improved

Two types of sample playback, normal and granular, have been added to version 2. The idea isn't to turn Absynth into a full-featured sampler but to send the timbral palette through the roof. For instance, you can combine sampled attack transients with analog-type sounds. You can turn a snare drum into a sustained, breathy wash in granular mode by changing the sample playback speed, start point, grain size and density, and the amount of randomness in the grain frequency, start time, and amplitude. In normal sample-playback mode, Absynth can manage a maximum of three samples at once, which barely qualifies as multisampling. You can edit loop points numerically but not graphically.

Innovations in the envelope department include Control-Driven and Sample Jump envelopes. The former turns an envelope into a mapper for any MIDI Control Change message. A single MIDI slider can thus make arbitrarily complex changes in a sound without sacrificing normal envelope control, because you can create and assign two envelopes to the same parameter. With Sample Jump envelopes, you can load a sample containing a number of separate drum hits, and then sequence them in any order. Which note you play will affect the pitch but not the rhythm. Even with some limitations, that feature goes well beyond Acid-style tempo stretching.

Except for Sample Jump envelopes (which couple sample start points with time values but have no up-and-down curves), each segment in an envelope can have an embedded LFO waveform. That unusual feature makes it easy to turn a three-segment looping envelope into a modulated LFO wave. In addition, MIDI can independently control the time and amplitude of each envelope point.

New filter modes include comb, 8-pole lowpass, and several allpass options. Modulating an allpass filter with an LFO adds a nice phase-shifting animation.

Absynth is the first soft synth I'm aware of that has a strong, effective implementation for user-programmable microtunings. You can individually tune all 128 MIDI keys. You



Native Instruments' Absynth goes beyond hardware emulations to produce sounds that no physical instrument can duplicate. Version 2 adds capabilities such as granular sampling and six new filter types.

can repeat a tuning in every octave, decide how many keys will be in each octave, and even define the octave's tuning size. Tunings can be defined in terms of ratios, MIDI key numbers, or absolute frequencies. Naturally, you can save your tunings, and a good set of factory tunings is provided.

Strong Stuff

Absynth is a class act all the way and is well worth its price tag. I encountered a little graphic weirdness in the envelope Edit window, and the program crashed once when I was editing sample loop points. Other than that, though, it worked very well. Between the awesome envelopes, granular synthesis options, powerful filters and waveshaping, ability to resequence drum loops, comprehensive MIDI control, and excellent microtuning capabilities, this synth is a sound programmer's delight.

If you find the sheer depth of the feature set a bit intimidating, don't despair. The factory sound library is excellent; it includes preset banks of atmospheres, loops, basses, percussion, and so on. Every patch I tried sounded great, and the utility for combining your favorites into new banks is very easy to use. No question about it—Absynth will get a thorough workout in my next music production. 🎧

Overall EM Rating (1 through 5): 5

Native Instruments USA; tel. (866) 556-4687;
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Web www.native-instruments.com

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"Brilliant!"

Tony Romano, Front of House, Diana Krall

"With more microphones emerging than ever before, the cream always rises to the top. Enter the SCX-25. The warmest mic off axis I've ever heard, no proximity effect here! I have recorded acoustic bass, tuba, violin, clarinet, guitar, piano, and vocals—all with unsurpassed clarity."

*Larry Cumings,
Grammy Award Winning Engineer,
David Grisman Quintet*

"The SCX-25 is my go-to mic for acoustic guitar. It adds a gentle presence boost that makes any acoustic sound better, and its lack of proximity effect makes the bass more natural than other mics I have used."

John Getski, PRO AUDIO REVIEW

"Two SCX-25s in a Baby Grand and my work is done! There's just nothing else like it."

*Pat Lucatorto, Audio Engineer,
The Tonight Show*

"My first choice on Grand Piano. Easily one of the finest acoustic guitar mics ever! The size and unique design make them very camera-friendly. I love them for the sound... television directors love them for their looks."

*Vaughn Skow, Audio Producer,
Live from the Bluebird Café*

"What you hear is what you get. Not only is it the best sounding piano mic available, the shape, size and mount allow you to get right on top of the soundboard."

*Paul Mitchell, Front of House,
Joe Sample and The Crusaders*

"I have miked dozens of bands at recent bluegrass festivals with just one mic—the SCX-25. The band's response is always the same—they can't believe the tremendous sound that comes out of a microphone with such a small footprint."

*Paul Knight,
Knight Sound Systems*

"I honestly think the SCX-25 is one of the best mics available, and destined to become a classic."

*Dennis Leonard, Supervising
Sound Editor, Skywalker Sound*



"IN A WORLD SUDDENLY CROWDED WITH CHEAPLY MADE STUDIO CONDENSER MICROPHONES DESPERATELY TRYING TO OUTWARM AND OUTSHEEN EACH OTHER, AUDIX HAS MANAGED TO PUSH FORWARD WITH THE SCX-25. A COOL-LOOKING AND INNOVATIVE MICROPHONE THAT CAPTURES DETAIL VERY ACCURATELY WITHOUT SOUNDING ABRASIVE OR HARSH, THE SCX-25 HAS A GREAT FUTURE IN THE DAY TO DAY WORKINGS OF ANY STUDIO."

ANDREW GILCHRIST, ENGINEER, ANI DIFRANCO

"I put a pair of SCX-25 mics in Diana's piano in July 2001 and they haven't come out since. These are the best piano mics I have ever heard—Brilliant!"

*Tony Romano,
Front of House, Diana Krall*

"I license piano samples to major keyboard companies like Emu and Ensonic. In what I do, every note is like a mastered CD. It is painstakingly hand crafted and has to be perfect. I have chosen the SCX-25 mics simply because they produce better source material."

*William Coakley, Sound Designer,
PERFECT PIANO SERIES*

"Those in need of an excellent piano mic need look no further. As an overhead drum mic, it provides a transparent and full-sounding presentation that is up there with the best. It's also a great choice for a sizable range of vocal recording duties."

*Richard Salz,
ELECTRONIC MUSICIAN*

"On Merle's current CD we recorded Willie and Hag with a pair of SCX-25s in the middle of the band to get a 'live' feel—and the vocals sounded great."

*Lou Bradley, Engineer/Producer,
Merle Haggard*

"I essentially just set the mics up, bring up the fader... and just sit back and enjoy the mix!"

Pete Horne, Horne Audio

"It behaves like a mic twice its size, a condenser with solid highs but no excessive top, and with a robust midrange and upper bass range that belie its visual appearance."

*Marty Peters,
RECORDING MAGAZINE*

"Having played the roles of artist, engineer, and producer, there is a fine balance between the technical and the artistic side of music. I find that the SCX-25 has really helped to bridge that gap as it faithfully reproduces vocals and acoustic guitar regardless of the style or content of the music."

Phil Keaggy, legendary guitarist

"...destined to become a classic."

Dennis Leonard, Supervising Sound Editor, Skywalker Sound

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Bill Gordon – TAXI Member

You would think that after thirty-five years of writing, and recording my own music, I would have had some major commercial success. Sadly, that wasn't the case.

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As a result of my membership, I signed a deal with a boutique publisher that got me my first placements in TV and film.

Soon after that, a large-scale, international publisher contacted me about publishing some of my tunes.

The next thing you know, the two publishers were “fighting” over my music!

While nobody threw any actual punches, it was incredible having two great companies slug-ging it out over my songs. A musician's dream-come-true.

The end result? I'll tell you in a minute.

First, I want to tell you the ironic part – I almost didn't join TAXI. I thought it sounded too good to be true. Man, was I wrong!

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and where I'm not – a constant reality check. And getting tons of opportunities to pitch my music has helped me stay focused and very productive.

It's obvious to me that the people at TAXI *really* want me to succeed. And they do so much to make sure that I do. It feels like I've got a team of experts who are on “my side.”

I can unequivocally say that the people at TAXI are the most informed, honest, honorable, helpful and loyal folks I have ever known in the music business. They never make a promise they can't deliver on, and they do it all at a reasonable price.



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Then there's TAXI's private convention which is FREE to members and their guests. The Road Rally isn't just the icing – it's a whole other “cake.” It gives me a deeper understanding of the music business, a bunch of great new contacts, and a jolt of inspiration.

TAXI also connected me with a Grammy™ winning producer who has worked with such legends as Jackson Browne, Michael McDonald, Luther Vandross, Maynard Ferguson, Freddy Hubbard, and Sarah Vaughn.

Two years later, he produced my album. The very same album that started the publisher slug-fest I told you about earlier. And how did it turn out?

I'm happy to tell you that *both* publishers signed some of my songs!

Thirty-five years as a working musician, a degree from Berklee, and all it took was a membership to TAXI to make me an “overnight success.”

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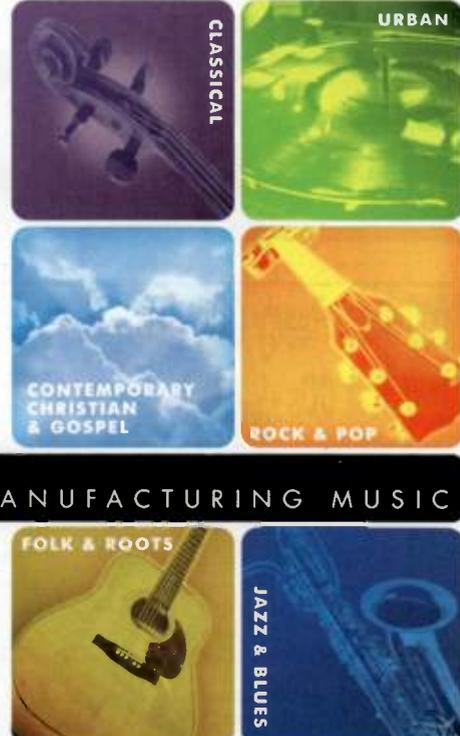
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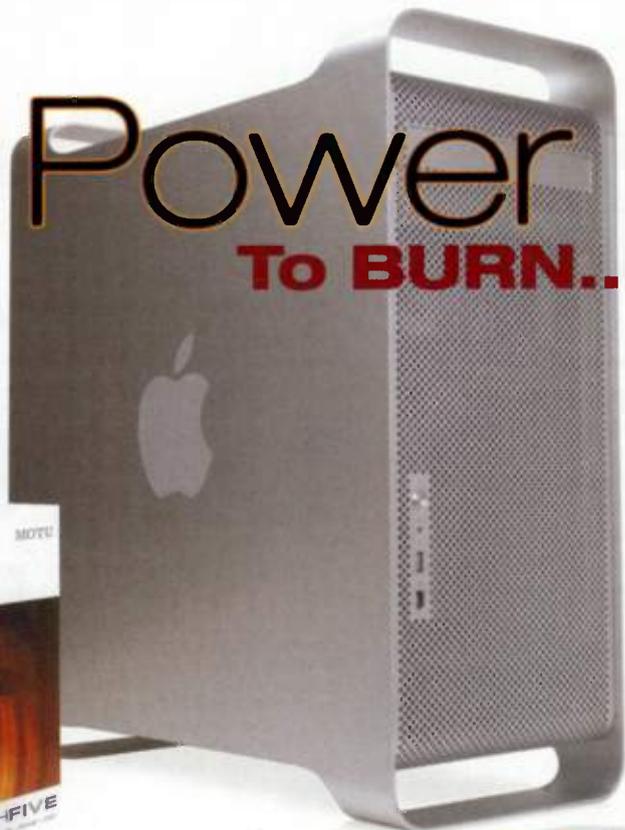
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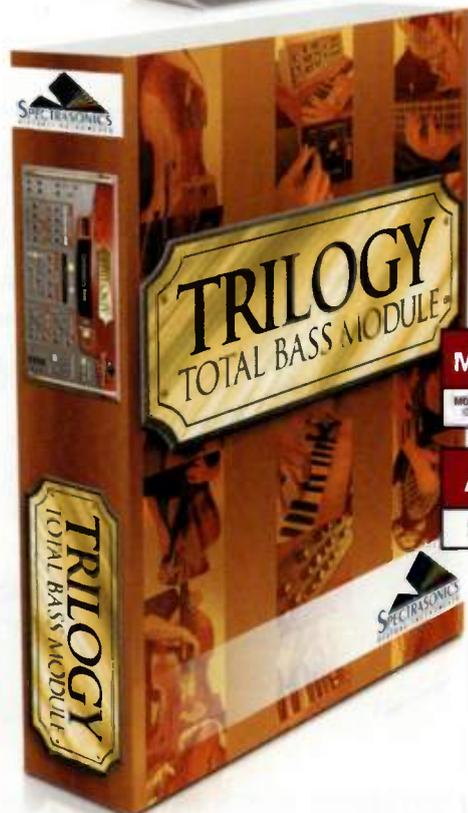
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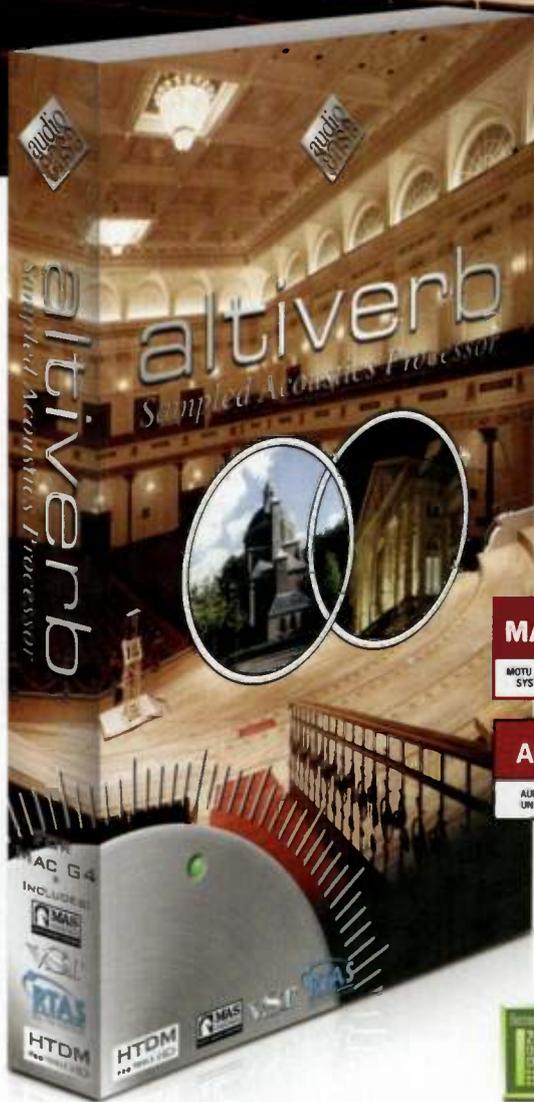
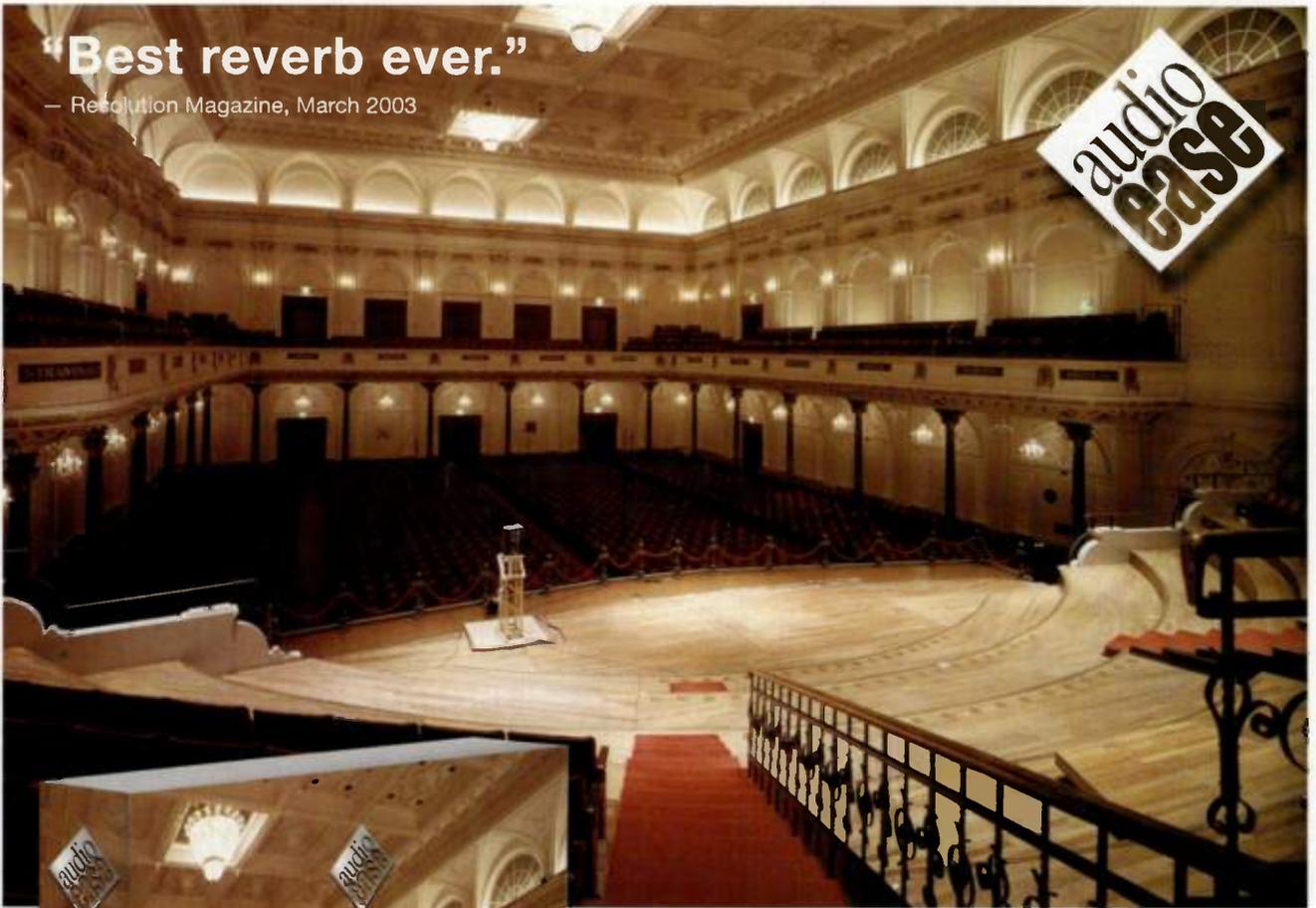


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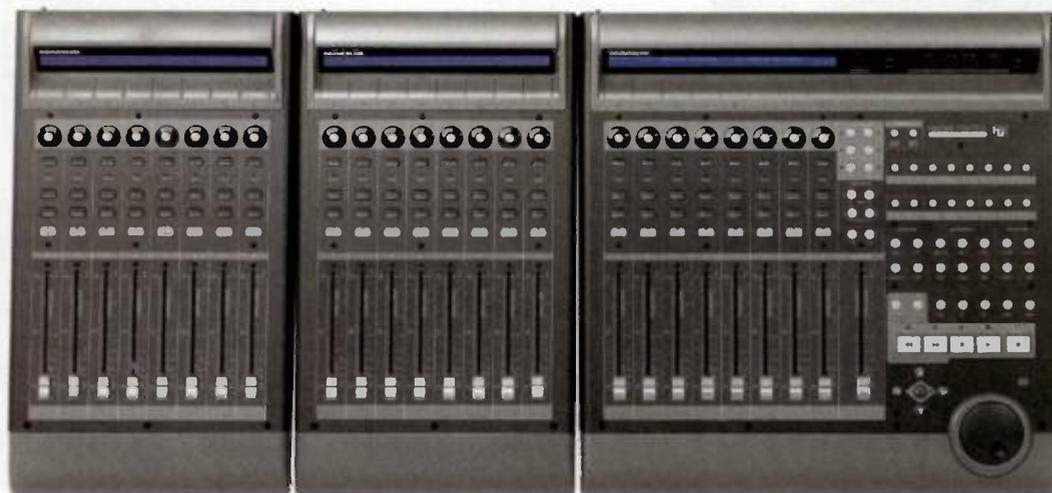
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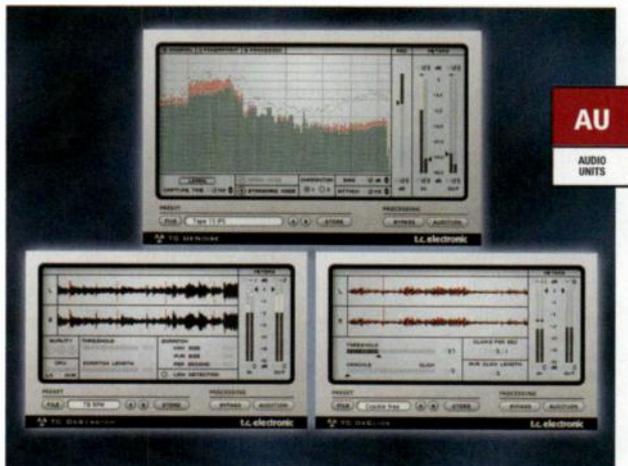
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Measuring Up

What is the measure of an artist's work? Is it popular success? Personal satisfaction? The outcome of comparative technical analysis or professional criticism? Financial power? How about the approval of one's peers? The answer to this question is so important that people change the shape of their lives or, in the worst case, end them, as a result of its pursuit. Countless beer 'n' bong debates rage over disputes such as Who's better: Blah or Foo? (Fill in artist names as appropriate.) Simply put, the question of whether one measures up artistically matters to almost every artist—and sometimes most deeply to those who declare that it doesn't matter at all.

One can muster arguments in favor of any of the common yardsticks mentioned above, but I posit that the greatness of an artist requires some sort of success. Defining *success* is the hard part. Take popular success: they say 50 million Elvis fans can't be wrong. But can they? Huge flash-in-the-pan successes are part of pop history. Lots of fans, lots of money—does that make the artists great?

What about U2, who fill stadiums every time they tour? Or opera singer Luisa Tetrazzini, who, in 1910, drew an estimated 250,000 people to Market Street in downtown San Francisco for a Christmas Eve concert (inspiring a chef in the crowd to invent turkey tetrazzini in her honor)? Are these great artists because so many people want to hear them? Popularity is unquestionably a compelling attribute.

But that doesn't quite ring the bell. If the artist desires to express a particular idea or feeling and believes the work accomplishes that, what more valid measure of success can there be? The fly in the ointment is that the artist (hopefully) is not the only one to whom the work matters, and the rest of the world might not agree with the artist's assessment.

All right, then, let's split the difference and say that greatness can be fairly gauged by a group of people qualified to make judgments, such as fellow artists and professional critics. With the benefit of their expert insights, inner workings of a creation may come to

light, facilitating an evaluation based on some relevant scale.

But then you have works such as Stravinsky's "Le Sacre de Printemps," Miles Davis's *Bitches Brew*, and Bob Dylan's first electric forays, all of which elicited derision from musicians and critics, as well as from many fans. Furthermore, people "qualified to make judgments" frequently differ in their opinions, depending on what they feel is important. A classical guitarist may not hold the same opinion of Elmore James's technique that Eric Clapton does.

Financial success as a sole criterion doesn't bear discussion, as it is easy to discredit, if difficult to ignore. Besides, we'll only come to the same conclusion: it may have some merit but is not the measure of an artist's work.

If none of these things is the correct measure, then what is? Nothing. There is no single, universal measure of an artist's work. With so many points of view, one person's genius is another's talentless charlatan.

But it gets worse when you consider the fourth dimension. As people grow and mature, their opinions can change, and work that seemed great at one time diminishes, while work once deemed worthless may be judged a masterwork with the understanding that comes with age. So no measure of an artist holds up.

However, I do believe time plays the largest role of any individual factor. Whether or not an artist's work is remembered, if it still seems great with the passage of time, that is powerful. There remains the huge question of who is judging and on what basis, but with the passage of time, we often gain a better perspective on a work. Even popularity grows in significance if retained over years. "Standing the test of time" is very slippery to define, but it is, at least, widely accepted as a valid criterion.

Contributing editor Larry Oppenheimer is a musician, engineer, and sound designer whose San Francisco-based company, Toys in the Attic, provides a variety of musical and audio services.



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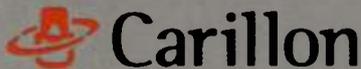


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