WAVES APA-44M
AUDIO PROCESSING ACCELERATOR

DAVID HELPLING gets bowled over by this new power-house from Waves – how many plugs do you want to run?

THE REVIEWER

David Helpling is a full-time composer/producer with over ten years experience in music for picture. He runs DHM Music Design in San Diego, California, producing music for film, TV, corporate, interactive, and web clients. David has two ambient/cinematic albums released on the Spotted Peccary label, with a third now in production, and has several independent film projects on deck. Clients include DELL Computers, Hewlett Packard, Boeing, Lexus, Microsoft Game Studios and Qualcomm.

Third-party hardware processing power is nothing new. A few years ago TC Electronic's PowerCore PCI card gave struggling native DAW systems a fighting chance. Then Universal Audio's UAD1 PCI card offered extra power and a high-end vintage plug-in set. Recently, external FireWire PowerCore units extended this power to laptop users. While these products did give you a boost in processing power, they also were focused around a specific set of plug-ins, many of which were only available with the hardware itself. WAVES has presented a new opportunity and a truly amazing level of processing power with their new APA hardware accelerator line. I put the APA-44M through the ultimate test using a Dual 2 Gig Apple G5, Pro Tools HD3 version 6.7 at 24-bit, 44.1kHz.

Out Of The Box

WAVES has introduced 2 APA accelerators: The APA-32 and the APA-44M. The APA-32 is a full rack space and is designed for machine rooms where self-noise is not an issue. The APA-44M is claimed as being 30 percent more powerful and is designed for desktop use but curiously it is only a half-rack. So the little one is the big one? Arriving in a fancy black box not much larger than the unit itself, the APA-44M seemed a bit heavy for a half-rack unit with an external power supply but I wasn't complaining. A black box the size of a mobile phone, the power supply comes with both 120 and 220V power cables and connects to the unit via a small 1-meter attached cord.

Also included is a two-metre Ethernet cable, two installer disks and a very nice user guide. With only a recessed power switch on the front panel, and a power port and Ethernet on the rear, the unit itself is fairly unassuming... but then I started using it...

Getting Connected

Connecting the WAVES APA units via Ethernet is a brilliant solution that not only rescues precious PCI slots, but also saves your host FireWire ports for the array of external audio interfaces and drives that have become a staple in the everyday DAW environment. Most serious artists and engineers dedicate their host computer solely to the requirements of digital audio and rarely use the built in Ethernet port for Cable or DSL modems. Those that do may be a bit miffed that they will have to dedicate their Ethernet port to the APA units. Yes, I did say dedicate – no other hardware may be connected in any way to the Ethernet port when using an APA unit. One huge selling point of the APA series is the ability to 'stack' up to 8 APA units together for an absurd amount of power but you will need, a third-party Ethernet switch.

Installation

The technology that WAVES uses to manage the hardware-accelerated plug-ins within your system is called Netshell. Before you can begin tapping the power of the APA units, you will need to reinstall any APA compatible Waves products you own with 5.2 (or the most current Netshell-enabled version). Your dealer should be able to supply you with a disk containing everything you need, as for the entire Waves 5.2-savy collection is a big chunk of data.

One very important side note: you must currently be using an authorised 5.0 version of WAVES plug-ins in order to use the APA accelerators. Any users still using V4 or earlier will have to upgrade to V5 (potentially a costly upgrade – particularly for the TDM platform).

Not all WAVES plug-ins take advantage of the Netshell acceleration but it seems that just about all of my power-hungry favourites were enabled and ready for testing.

At the time of writing the current APA compatible plug-ins were L3 Multimaximizer, L3 Ultramaximizer, IR-1 V2, IR-L, IR-360 (Mac), Linear Phase Equalizer, Linear Phase Multiband, C4, Renaissance Reverb, Renaissance Channel (no external side-chain), SoundShifter, Morphoder, TransX (Multi), and Q-Clone.

Acceleration!

So my Waves plug-ins are all Netshell enabled and authorised and the unit is connected and powered up. So I go to insert an IR1-V2 into my session and sure enough, there is a version with a little 'n' after it in my list of plugs… and it works. So I have one of the most CPU intensive Waves plug-ins running in my session and the Pro Tools hardware hasn't been touched… cool! So how many can I have before I'm maxed out? In order to know that you're approaching

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peak power on the APA you will want to have the very handy Netshell Monitor open when using the unit. I was a bit disappointed in the delayed and somewhat "mushy" updating of the Netshell monitor meter but other than that it is very well designed and displays all relevant information. I then proceeded to add 7 more IR1's before I had clipping on the Netshell monitor. Waves advertises that you can use 8 IR1's with the APA-44M and that's just what I achieved (though they were all set to "low" CPU load). To further test the advertised spec I added six L3 Multimaximizers and had them all running beautifully… quite a stunning achievement. Please see the performance comparison table for a complete listing of all plug-ins tested.

What's Going On Here?
Although I was very impressed with the stability and near perfect performance of all plug-ins tested, I did start having some strange results with several Waves plug-ins. Some were downright amazing in sheer number and performance. The ever-popular C4 Multiband Parametric Processor yielded 20 stereo instances and even at a full 100% processing power there were no audio dropouts or erroneous noises. The first hint of something strange was when I started adding Q-Clone plug-ins. I could indeed add the reported 19 instantiations and even far exceed that number, but when I tried audio playback everything screeched to a halt. What is happening here? Is it possible that the Netshell version of Q-Clone is faulty? I wish it were that simple.

After some further testing it became clear that. Certain Waves plug-ins were pulling processing power from the Host G5 machine. After even more testing it was found that *all* Netshell enabled Waves plug-ins draw some amount of power away from the host machine. This may sound alarming but it works out to be a minor issue most of the time and the actual draw on the CPU is often quite small. The fact is that different Netshell enabled plug-ins require different amounts of Host CPU, but not in a consistent manner. For instance, Q-Clone plug-ins use more than four times as much Host CPU than the C4. This is why I could instantiate way more Q-Clone plug-ins than my Computer could playback – the Dual 2 Gig G5 was overworked.

So the Host CPU speed will affect the number of Netshell enabled plug-ins you can instantiate and inversely, full CPU processing on your host computer is not available with Netshell enabled plug-ins in use. If you don't use many Q-Clone or Renaissance Channel plug-ins, you may never notice the draw on your Host CPU. It is also very possible that these particular plug-ins will behave differently in the next version upgrade. Over all, the stunning number of great Waves plug-ins that I can now use greatly overshadows the few that lean on the Host CPU more than they should.

Buffers
Even with a Pro Tools HD system, playing in MIDI parts to non-TDM virtual instruments requires a buffer setting of 256k or better for a near-zero latency feel. The Waves manual states that using any HTDM Netshell enabled plug-ins require a Host Disk Buffer setting of 512k. While I knew this was the case, all of my tests were performed at 256k with both RTAS and HTDM without any issues. Perhaps there is an HTDM issue with other buffer settings that I didn't touch on.

In the Netshell monitor there is also a buffer that must be set manually by the user. The Netshell Latency must be at least twice the value of your Host Application's Hardware Buffer in order for the Netshell plug-ins to work smoothly. The value is listed in samples and is accessed through a drop-down menu with a minimum of 256 and a maximum of 16384. Next to the Netshell Latency field, the Max Host HW Buffer field displays the maximum allowed host hardware buffer size for the selected Netshell latency. So it's a handy reminder to manually change your DAW setting to be compatible with that of The Netshell. Any change in the Netshell latency requires closing and re-opening of an active DAW session in order for the change to take effect.

A Generous Gift
Investing in an APA Accelerator has another serious benefit. Waves is including The IR-L and Q-Clone Plug-ins with the purchase of either model. If you are considering the IR line of Convolution Reverb Processors or the

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Q-Clone Plug-in, the purchase is an easy one. The IR-L stands for "light" but the quality and richness is exactly that of the IR-1 (v2). Only less 'tweakable', the IR-L's ability to emulate the best acoustic spaces on the planet is still the same. With the ability to capture the exact tone and response of your vintage outboard EQ and save multiple curves, Q-Clone is like having a near endless rack of your favourite tone boxes.

Comparisons

So what users will benefit the most from the APA Accelerators? The sheer number of Native DAW users currently running Dual Processor Apple machines must greatly outnumber those running the current high-end standard of Pro Tools HD. In all of my tests the APA-44M's power was almost exactly equal to what a non-APA accelerated Dual processor G5 could manage on its own and approaching a standard Pro Tools HD3 system. Such variables as the use of Digidesign Accel cards and the lack of chip-spanning on TDM systems may tip the scales one way or another.

For Composers and Engineers running Digital Performer or Logic, owning an APA-44M is like having a second Dual 2 Gig G5 in a half-rack box running all of your Waves plug-ins. Granted the APA-44M may cost almost as much as a new Apple machine, but the seamless integration and size greatly outweigh the complexity and bulk of networking two machines from one session. Now that a native DAW user can almost outgun a standard Pro Tools HD3 system with one APA-44M, we may view the lofty Digidesign price tag a bit differently... not to mention the empowerment to those feeling inferior to the TDM world.

For Users of ProTools HD, the APA-44M will add a huge chunk of power for less than the cost of a Digidesign process card. What's more, the ability to run Netshell enabled WAVES plug-ins in RTAS format instead of TDM will free Digidesign users

from the high and often double TDM price tag.

Whatever platform you work in, the extra processing power will get you through big sessions with the uncompromised quality of Waves plug-ins to fuel your production whims. If you upgrade or change platforms, the APA goes with you to provide the extra power you need to be freely creative with your audio. ▲▼

WAVES BUNDLE DEALS

In an extraordinary demonstration of generosity, Waves is currently offering a cash rebate deal on purchases of the APA hardware and Waves plug-ins. The details vary between products but essentially you get between 20 and 30 percent of the plug-in value back when you purchase them at the same time as the hardware, up to limits of approximately £825 against an APA-44M and £555 against an APA-32 (per APA box bought). So if you buy a Waves Gold Native bundle (normally £2200) at the same time as an APA-44M, the software will actually cost you only £1700. This deal applies world-wide, so check with your dealer for details.

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INFORMATION

£ **Waves APA-44M £ APA32 £1020 + VAT; APA44 £1531 + VAT.**

Waves (USA).
✆ **+1 865 909 9200 ext.2.**
ⓦ **www.waves.com**

 UK Distributor: Sonic Distribution.
✆ **+44 (0)1582 470 260.**
ⓦ **www.sonic-distribution.com**

RESULTS TABLE

PLUG-IN MODEL	NETSHELL	NATIVE	TDM	COMMENTS
IR1 V2 Full	8	8	n/a	Tested in "low CPU" mode
IR-L Full	7	9	n/a	Tested in "low CPU" mode
L3 Multimaximizer	6	6	n/a	
L3 Ultramaximizer	6	7	n/a	
TransX Multi	21	22	24	Low TDM number due to lack of Chip Spanning
C4	20	21	24	Low TDM number due to lack of Chip-Spanning
Renaissance Channel	26	27	48	Plug-In size permits 2 TDM instantiations per process chip
Linear Phase EQ				
Broadband	9	11	25	Plug-In size permits 2 TDM instantiations per process chip
Linear Phase Multiband	8	7	25	Plug-In size permits 2 TDM instantiations per process chip
Renaissance Reverb	12	12	25	Plug-In size permits 2 TDM instantiations per process chip
SoundShifter	2	3	n/a	
Morphoder	8	13	25	Plug-In size permits 2 TDM instantiations per process chip
Q-Clone	16	20	n/a	Netshell at 86%, number limited by Host

All tests performed on a Pro Tools HD3 system at 44.1kHz 24-bit STEREO with a hardware buffer size of 256 samples and a Netshell latency of 2048 samples. Host CPU was an Apple Dual 2 Gig G5.