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Universal Audio UAD-2 DSP Accelerator

by [Barry Rudolph](#)

FIELD TEST

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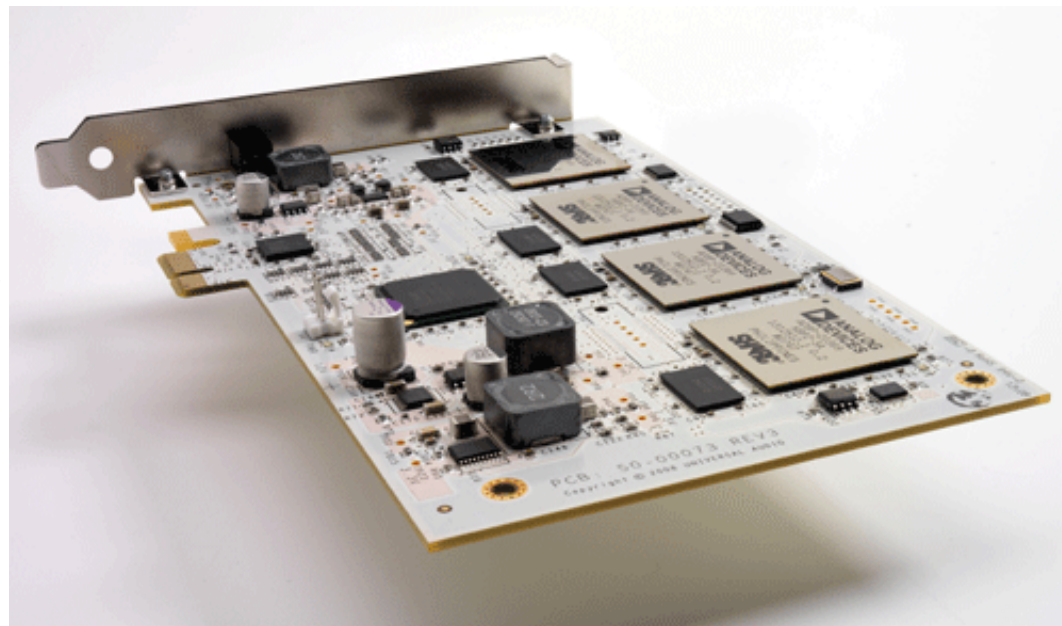


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Following the worldwide success of its award-winning UAD-1, Universal Audio offers the second-generation UAD-2 card and Version 5 software. Three years in development, the UAD-2 offers more speed, options and power at a price within the grasp of any studio owner. At the same time, Universal Audio will continue to support and develop new plug-ins for the UAD-1 as well as release new plug-ins or virtual instruments specifically for the UAD-2. Compatibility between sessions using plug-ins running on the UAD-1 and other sessions running the new UAD-2 card is also assured.

The UAD-2 is a PCIe card that's compatible with PCIe 2 and uses Analog Devices' 32-bit, floating-point math 21369 SHARC chip(s). Inserted into any available single PCIe slot, the UAD-2 can be freely mixed with your existing UAD-1 card collection--whether they are PCIe or PCI cards. Up to four UAD-2 and four UAD-1 cards will run in a system using a single software license.



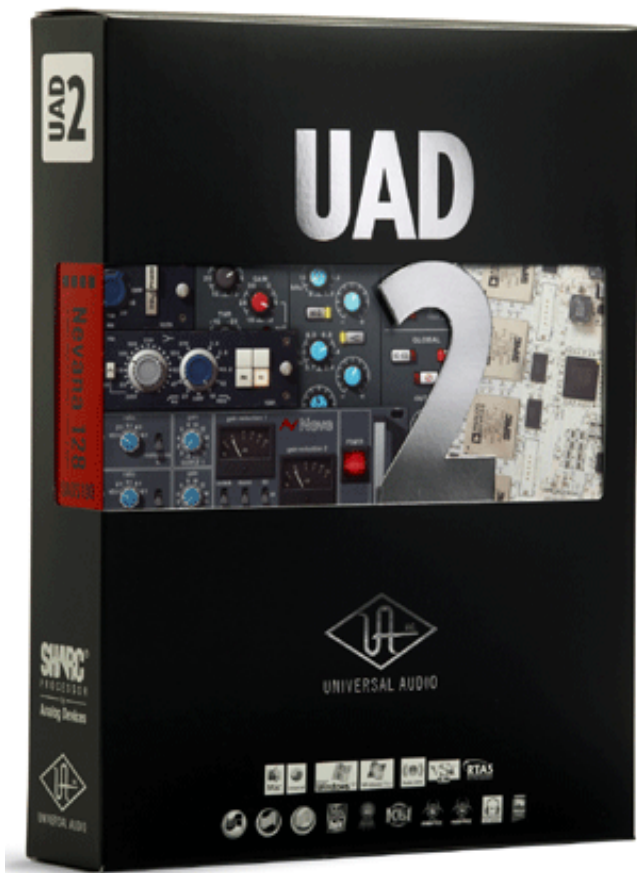
Conservatively rated by the number of plug-in instances possible as compared to a UAD-1 in 44.1kHz/24-bit sessions, the UAD-2 comes in three versions: Solo, with a single DSP chip and 2.5 times the power of a UAD-1; Duo, with two chips for 5x; and the Quad card, which uses four chips for 10x.

Nine different hardware/software bundle combinations range from \$499 to \$1,999. Adding to the fun, Harrison, Moog and Little Labs will join UAD's existing plug-in partners Neve, Roland, SPL, Helios, Valley People and Empirical Labs with emulations of their products. Crossgrading UAD-1 plug-in software to UAD-2 will be free until the end of 2008--even though not all Universal Audio plug-ins run on the UAD-2 yet.

Brand Shiny New

The UAD-2 supports VST and Audio Units hosts at up to 192kHz rates on Mac OS X Leopard/Tiger and Windows XP/Vista PCs. RTAS support is in the works and the card's new architecture has solved the multicore spiking issues for users of Logic 8 and Mac/Tel 8-core computers.

The new plug-in GUI has a redesigned toolbar that indicates which UAD card (1 or 2) is running it; LiveTrack™ on/off; and improved preset management where you can copy plug-in settings back and forth between SE and Full versions of plug-ins. The UAD Meter is a separate application and does not have to be running for the plugs to operate; it has three "fuel" gauges that show the UAD-2's approximate DSP load, onboard Program Memory remaining and UAD RAM storage. With a single click, you can disable all plugs running on either the UAD-1 or the UAD-2 cards in your system. Access to the Control Panel is via the UAD Meter.



The greatly expanded plug-in tab has a Controls View/Parameter mode if your host supports it; a System Info page for more details on each UAD card in your system such as the number of running plug-ins per card, each card's latency and the amount of DSP load, Program Memory used and RAM usage for each SHARC chip; the Plug-Ins page with all plug-in assignments; and a single-click, demo mode/purchase/authorization scheme if you've already set up a UA account online.

The new DSP LoadLock™ feature reserves the maximum amount of UAD-2 DSP load required by each plug-in--even for features you've disabled. LoadLock is turned on by default but you can choose to disable it if you want to micromanage your DSP resources. With LoadLock on, the UAD-2 will allot for any additional DSP load incurred later in your mixing process, such as plug-in automation.

LiveTrack reduces latency at the expense of more CPU load. The latency of any UAD-2 plug-in--except those that have look-ahead (Precision Limiter) or up-sampling (1073, 1081, Pultec) or phase linearity compensation (Precision Multi-band)-- is reduced as low as possible, even when recording live audio. Instead of buffering the audio, it is transferred and processed immediately.

The Live Optimizing DSP Engine™ (L.O.D.E.) constantly balances the loading across multiple DSP chips of the UAD-2 cards. For backward (UAD-1-based) session compatibility and because of the completely redesigned architecture of the UAD-2 card, it is not technically feasible to dynamically allocate and spread DSP load across both UAD-1 and UAD-2 cards.

UAD-2 vs. UAD-1--Smackdown in the Studio

To test the UAD-2, I called on producer/songwriter [David Gamson](#) to help me try to break it. He already owns three PCI UAD-1 cards and all the plug-ins, so we were able to do real-world tests. Gamson makes records using Steinberg Nuendo V. 4.1.3 on a PC with an Intel quad-core Q6600 chip, on an ASUS Commando motherboard overclocked to 3 GHz. He runs Win XP SP3 and a RME Fireface 800 I/O unit plugged into the motherboard's FireWire port.

The first order of business was to install the V. 5 UAD-2 software, boot up and let the new multicore-aware drivers install. Next, we installed a Quad UAD-2 card into a 16x PCIe slot and started up the computer to authorize the card and Gamson's existing plug-in collection. Authorization happens via the Control Panel where the Authorize Plug-Ins button opens the www.uaudio.com Web store.

The System Info tab within the Plug-ins Tab shows the entire list of all UA plug-ins with a selector to designate any or all of them to run on either the UAD-1 card(s) or UAD-2 card(s). However, with this first version of UAD-2 software, these selections are not saved with the session files. I think this should be a "set-and-forget" preference file. If you collaborate with others, one workaround suggestion is to send a screenshot to those who share your plug-in list, including UAD-1/UAD-2 plug-in assignments.

After using the UAD-2 during sessions, we decided to choose the Quad UAD-2 card to run DSP resource-hungry plug-ins, such as the Neve 33609 Limiter-Compressor, and leave the UAD-1 to handle less-intensive plugs such as the Cambridge EQ or Precision De-Esser. At the time of this review, not all the UA plug-ins had been ported over to run on the UAD-2, so the software automatically selects those that have not been ported to run on the UAD-1. If a plug-in runs on either card, it will default to the UAD-2, but you can change it in this window at any time.

Let's Get Loaded

Working at 44.1kHz/24-bit and without changing any buffer sizes or anything else in Nuendo, our first test was a big session that used 76 percent of the resources of all three UAD-1 cards. After adding in the UAD-2 card (you can enable any card on or off using the Control Panel) we restarted that same session, which then used 23 percent of the UAD-2's resources and just 11 percent of the UAD-1 trio.

Next, we built a session with only the UAD-2 card enabled and managed to run 57 tracks--each with a Neve 1081 set with all bands and filters switched on. Note: In hardware form, 57 vintage 1081 modules would set you back about \$171,000!

In the past, we seldom used the Neve 33609 plug because it would consume most (about 66 percent) of a UAD-1 card. We got 19 stereo instances of it using only the UAD-2 card. For the modest Cambridge EQ: 47 instances in mono on one UAD-1 card; 105 using all three UAD-1 cards; and 151 instances on one UAD-2 card. We were able to build a mixer with 128 Neve 88RS Channel Strip plug-ins with LoadLock turned off and only the EQ + DYN (or Gate) sections enabled.

Got reverb? Still using only the UAD-2, we got 24 instances of the stereo Plate 140 plug-in. I have to say that we're greatly impressed but I have to add that, at least in our Nuendo rig, when running the UAD-2 on the "ragged edge" and instantiating the maximum number of plug-ins possible, at times that number was lower when we saved, closed and reopened the same session.

Finally, we tested the LiveTrack feature and, although we don't have a way to empirically measure it because Nuendo 4 "auto-corrects" upon playback, there is an audible decrease in latency while playing live through an LA-2A plug-in running on the UAD-2 card as compared to the same plug running on the UAD-1.

Getting Better All the Time

Reminiscent of recording and mixing in world-class studios with giant consoles and many racks of classic outboard gear, the UAD-2 allows the same kind of creative freedom: the ability to use virtual signal processing without the traditional concern over DSP resource restrictions. The UAD-2 breaks all the UAD-1's limitations with nearly unconstrained processing power, making it a dream come true for all DAW users.



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