TAPE OP

The Creative Music Recording Magazine
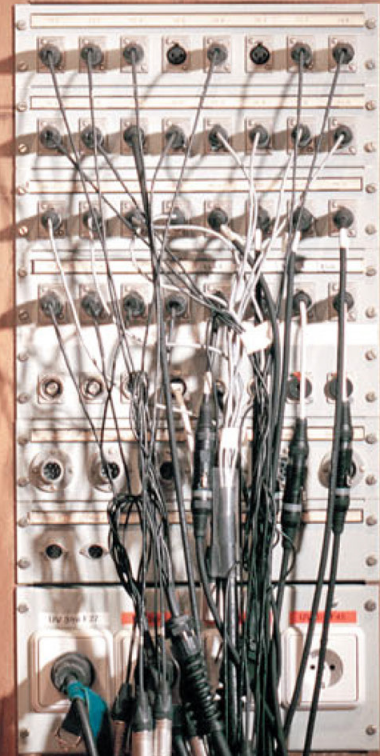
that doesn't offer true-peak limiting, but there is a technical explanation. Traditionally, to provide transparent limiting without aliasing, there is a risk that a peak, or an inter-sample peak, will exceed the user-defined ceiling. For example, the original Pro-L would brickwall limit (but could alias) when running at 1x. Enabling oversampling reduced aliasing but did not always honor the user-established ceiling. Now users can freely select oversampling (from 2x to 32x) while enabling true-peak limiting – and, rest assured, the signal will not exceed the stipulated maximum output.

Granted, these updates are "nice-to-haves," but three things make the *Pro-L 2* appealing to busy engineers. First, the new Loudness Metering display is both intuitive and is truly a godsend. A single screen presents information about limiting over time, release characteristics, peaks, momentary loudness, minimum values, target levels, target range, and more. *Pro-L 2* can create a loudness profile map of an entire piece of audio by running in Infinite mode. Anyone adhering to a broadcast standard recognizes the value in that functionality.

Second, the meters are upgraded to provide more context for the processing. In Loudness Metering mode, the bars are given context via target levels shown in LUFS (Loudness Units Full Scale). Traditional VU and PPM meters were based upon electrical measurements. They work well in the context of gear, but less so when comparing levels among sources in a broadcast situation. In recent years various government agencies developed new standards with an emphasis on how the human ear perceives loudness as opposed to average or peak electrical levels. Presently, the LUFS scale is used extensively by television broadcasters, video game creators, and internet streamers. It is worth noting there exists a refinement called LKFS, which employs K-weighting to account for differences in frequency response; however, for all practical purposes the two terms can be used interchangeably. Mostly people in the United States talk about LKFS whereas LUFS is more popular in the Europe. FabFilter is based in the Netherlands. Do the math.

Common formats come as preset options: -9 LUFS (CDs), -14 LUFS (streaming), -23 LUFS (EBU R128), or -24 LUFS (ATSC A/85 and TR-B32). Users can enter a preferred target level if none of these are appropriate for a particular project. The real time level display with peak gain reduction labels is unique. As the display wiper draws waveforms, red shaded areas show limiting while displaying gain reduction values. A thin white loudness curve displays the overall loudness over time in the real-time level display. Finally, a Unity Gain option allows you to audition the limited versus unlimited at the same relative loudness. That way you don't assume your louder version is better.

The combination of new algorithms, just enough tweakable parameters, and its superb workflow make *Pro-L 2* an elite limiter. The ability to get more loudness out of a mix while retaining transient punch and avoiding aliasing pleases clients. *Pro-L 2* never feels heavy-handed unless you intend it to be. I find I'm working faster and getting favorable results, so I must recommend this plug-in. A free 30-day trial is available.

($199, fabfilter.com) -Garrett Haines <treelady.com>

Lynx
Aurora(n) interface

Good digital conversion has come a long way in a relatively short time. There are now so many great options, ranging from streamlined 2-channel desktop interfaces and modular systems all the way up to multichannel I/Os that serve the needs of large format professional studios. Lynx is not new to the game, consistently building top-of-the-line converters for audio tracking, mixing, playback, and mastering needs for over 20 years. The latest offering from Lynx is their *Aurora(n)*. Lynx continues to use swappable LSlot cards with their Hilo [*Tape Op* #90] and original Aurora [#73] interfaces. They've carried on that LSlot technology to the *Aurora(n)* and have introduced several new modules that allow you to configure the interface to fit your workflow. These can be configured at the time of purchase <lynxstudio.com/custom-shop> or upgraded later. This modular system (when using the LSlot for computer connectivity, paired with firmware updating) makes the *Aurora(n)* essentially "future proof." Currently swappable LSlot cards are available for USB, Thunderbolt, Pro Tools | HD, and Dante.

My single rack space review unit came configured with 32x32 I/O (also available in 8x8, 16x16 and 24x24 versions) with a Thunderbolt LSlot card. Because I planned on using the *Aurora(n)* with both with my newer Apple laptop and my older Mac Pro tower setup, Lynx also sent me an LT-HD LSlot card (for my Pro Tools | HD system) that I could swap out for the Thunderbolt card. The analog line inputs and outputs are connected via DB-25s on the back panel. The back panel also sports BNC connectors (1 in and 3 out) to an ultra-low jitter word clock. Different rear module configurations and combinations allow you to customize your entire I/O, within reason. Lynx currently offers a 4-channel mic pre with A/D (LM-PRE4), an 8-channel analog I/O (LM-AIO8), and a 16-channel AES/EBU digital I/O module (LM-DIG) with more options on the way. Setting up was "plug and play." Simple changes to my DAW's I/O configuration were all that I needed for use with laptop via the Thunderbolt LSlot card, and, when switching to the LT-HD LSlot to integrate with my older Mac Pro / Pro Tools 10 [#86] system with HD Accel cards, the converter appeared seamlessly as a compatible 192 device (more on this later)!

The real highlight of the *Aurora(n)* is its sound, due in part to the analog signal path for each channel that has been designed as a self-contained and shielded circuit. Plus, each channel pair has its own dedicated conversion device. This offers the sonic advantage of reducing crosstalk and distortion while significantly increasing dynamic range and performance, resulting in transparent imaging and detail. HCT (Hilo Converter Technology), which borrows the mastering grade conversion design of the Lynx Hilo, makes up the core of the *Aurora(n)*.

But how does the *Aurora(n)* sound? In a word: awesome! It's uncolored, and elements of my mixes were presented with what I perceived as more of their own "space." After working on a mix for several hours, I found myself using less EQ and reverb. Maybe we had done such a fantastic job of recording it that it was unnecessary, but regardless, with this clarity I knew that I was making informed choices. Stereo imaging was solid and the sound stage expansive. With any conversion, my preference is to not hear it. I just want to be confident that what I am hearing is not being altered in the conversion process. If something needs grit, great! I can add it. If the low end of a track needs to be tidied up, I want to have a crystal clear idea of just how much. The *Aurora(n)* delivered on all fronts in this regard, and I worked more efficiently when using the Lynx.

Another standout feature of this unit is that microSD recording is built-in. When you are tracking, and the band plays that magical idea during a run through of a song, you won't miss it – even if your DAW wasn't actively recording or, worse yet, crashes in the middle of a take! This is a great safety net and dummy check. Imagine the uses (and redundancy) for live show recordings…

Front panel function buttons control a menu that provides easy navigation of the LED display, which offers two main metering options: stereo or multichannel. Here the user has the option to route pairs of audio outputs to the SD recorder or to the two built-in, fantastic sounding, audiophile grade headphone outputs with individual level controls. Without referencing the manual, it was easy to understand and operate.

Due to the compact form factor for all this I/O, the *Aurora(n)* makes for a great mobile rig option that is a snap to throw into a manageable rack along with some preamps and select outboard gear. Because of the SD recorder onboard, you could skip the computer altogether and just record straight to the card, noting however you have no DAW control functions beyond record and stop. All tracks from the microSD card can be dragged right into your favorite DAW for editing later!

Swapping out the Thunderbolt LSlot card for the supplied LT-HD LSlot card was very easy; a screwdriver was all I needed. I especially wanted to audition this option because I am sure that not everyone that's upgrading converters will want to completely replace their computer, software, etc. The thing that sucks about working in the digital realm is that a single update of a system component is almost never just that, but rather an extensive and expensive endeavor. Set up was straightforward, and, as mentioned earlier, with a few adjustments in Pro Tools, the system saw the *Aurora(n)* as a compatible 192 I/O. I ate up all my I/O options with analog connections, but, with the use of some mults and patchbay magic, I was working in the same way I had for years – only it sounded markedly better.

Gear at this level doesn't come cheap. A maxed out 32x32 *Aurora(n)* configuration will run about $5600, which, in my opinion, is a more than fair price if you never have to think about buying another converter – well worth the cost for its high-quality and uncompromising audio. Comparing the *Aurora(n)* to other converters in its class is like comparing bad-ass sports cars. They look great and are fast as hell, so it's just a matter of taste really. With that in mind, the *Aurora(n)'s* ability to integrate future forms of connectivity makes it a stand out amongst the others.

($5,599 street; lynxstudio.com) -GS

PSP Audioware
PSP E27 plug-in

The *PSP E27* is a multi-stage equalizer plug-in modeled after the Avedis Audio Electronics 500 Series E27 [*Tape Op* #121] units. Also included is the PSP E27 SE, a simplified version of *PSP E27*. Note, the SE is not a lighter resource version though. It's a streamlined GUI for the same audio engine, making it ideal for occasions when simple adjustments are required. Avedis Audio Electronics has approved all of the graphics, functionality, and sound of this plug-in.

By default, the *E27* presents three EQ bands per channel, but can double to six bands pressing the X2 button. Each non-overlapping band has nine selectable frequencies. Gain control affects the amplitude of boost/cut as well as the Q width. The more significant the gain change, the narrower the Q bandwidth. Geeks refer to this as "relative Q." Something that

PSP should showcase more: the plug-in also includes the PA11, a unique module for preamp processing and external control for the *E27*. This preamp stage features component drive control, high-pass filter, master output level control, and a DRIVE feature to increase input while decreasing output. Internally, the code oversamples source audio for an improved high-frequency response.

I got beautiful results with the *PSP E27*, even in mastering. It saved the day on a guitar-focused release for metal band Through These Walls. In that instance, I used the unit in Mid/Side mode to showcase the guitar work of the tracks. I'm still impressed that substantial gain levels (I would rarely use in mastering) worked well with this plug-in, but I wanted to test it against real-world inspiration.

Fortunately, Greg Gordon (still recovering from his Grammy win for Ghost's *Best Metal Performance*) was willing to haul his personal Avedis E27 hardware EQs over for comparison. We started by matching the same settings on the GUI as we had established on the hardware. For some sources the sound was dead-on similar, especially single band EQ changes. But on a two-channel mix, we could not get the overall sound to gel the way the hardware does. Vexed, I went to get a pint of coffee while Greg tweaked settings. Having experience with the equipment and knowing that variations of physical components can make eyeballing controls an unreliable approach, Greg kept at it. After a few minutes I heard him exclaim "that's it!" and I came running down the hall. Through careful adjustments of the gain stage and application of the transformer emulation, he was able to get the hardware and software very close.

Specifically, Greg shared these debriefing notes for fellow *Tape Op* readers; "My feeling was the plug-in midrange felt very close to the hardware. The top on the plug-in was smooth and musical, though not quite as open as the hardware, but still close. The bottom felt a bit tougher on the hardware. However, these observations were with no modification of the amp or transformer settings on the plug-in. This initial comparison was just EQ versus EQ. After going into the PA11 section and driving it a bit, we could match very closely. With no drive, it felt like an excellent plug-in – clean and relatively transparent. After playing with the drive in combination with the EQ, everything took on a very analog feel. For my own work, I have a stereo set of the hardware, but when I need more channels, I will turn to the *PSP E27*. I've used the plug-in for high-end air and clarity on vocals and snares with much success. I like the hardware feel to the interface rather than the typical 'graph with a line.' This presentation appeals to my sense of tradition and simplicity. It feels like a console module that you tweak by ear instead by eye. I'm generally not at all into digital plug-ins for equalization. I prefer to get my tone from compression, hardware, and simple filters. But there are few plug-in EQs that I trust enough to keep in my "go-to" box: *Avedis E27* is now undoubtedly one of them. It just sounds musical."

Since the release of the Vintage Warmer [*Tape Op* #29], I've been a fan of the offerings from PSP Audio. Other than non-available vintage units, the Polish company has done little or no plug-in emulations before the Avedis partnership. We are fortunate that they undertook this project. Whether for mixing or mastering, you can get a lot of tone and vibe out of this plug-in. I highly recommend it, and so does Greg! Available in VST3, VST, AAX and RTAS for Windows; AudioUnit, VST3, VST, AAX and RTAS for Mac OSX.

($149; www.PAPaudioware.net, avedisaudio.com)
-Garrett Haines <www.treelady.com>
w/ Greg Gordon <www.gregordon.com>