"By using the 'learn' function for about a second, the passing audio was then immediately processed and I was blown away. Not only had the noise totally vanished – I mean absolutely gone – but also the punch and clarity of the vocal was astonishing."

Ben Burns

Cedar **DNS 8 Live**

Multi-Channel Dialogue Noise Suppressor

CEDAR Audio is a company with a fascinating history. Following a 1983 research project commissioned by the British Library National Sound Archives, the company was formed in 1988 and went on to develop all manner of noise reduction products. Aided by incorporation into third party products, such as Sadie and Pyramix, world-class noise reduction technology was presented for the first time to studios of all sizes.

Although initially intended for cleaning up the national archives, tens of thousands of CDs and DVDs were soon re-mastered utilising CEDAR products, not to mention noise reduction for many Hollywood films, TV newsrooms, and a host of live-to- air broadcasts. More recently, audio forensics users include police and security agencies you've heard of, and many others who remain anonymous. Pioneering work into audio restoration and speech enhancement even bagged the company an Academy Award® in 2005, for its services to the film industry.

DNS 8 Live

Although CEDAR's DNS (dialogue noise suppression) processors have all featured real-time processing with near-zero latency, this is the first time that eight channels of processing have been packaged together in a small box with a simplified two-button operation mode.

So, what does the DNS 8 Live do? The basic idea is to remove, or at least reduce, a constant annoyance in many film and TV sets: noise. This could be things such as air conditioning systems, TV lights, traffic rumble, and camera equipment. In the live environment, it can be used to reduce the background noise of signals from, say, sensitive lectern microphones that often require dramatic dynamic processing as a result of bad public speakers who whisper very quietly from three feet away, or shout and scream right into the capsule. Lavelier mics are also great at picking up the noise from clothing, jewellery, and other performer-induced noise. There's no excuse for a lack of preparation, but utilising the DNS 8 Live can turn these annoyances into a thing of the past. Other sources of noise might be set machinery such as a West End show performer rising through the stage on a noisy lift whilst trying to sing a soft passage. Elsewhere, show announcers often sit in noisy production areas surrounded by computers and fans, but still need to make crystal clear announcements. These are just some of the areas where the DNS 8 Live could drastically improve the clarity of the human voice, helping to deliver intelligibility in difficult acoustic environments.

THE REVIEWER
BEN BURNS is a London-based freelance engineer- both live and studio- with credits including Blur, Dido, Embrace, Happy Mondays, and more.

From The Manufacturer:

"We developed the original DNS1000 and its successors specifically for use in film and TV post, with facilities and control panels carefully designed to optimise them for this purpose. Of course, we were delighted when we discovered that they were becoming widely used in fields as diverse as dialogue recording, live sound and audio surveillance, but we felt we could do more for our customers working in the areas of sound reinforcement and live-to-air broadcast. This entailed far more than repackaging the existing DNS technology, and the DNS 8 Live is the culmination of years of research into the underlying algorithms as well as innovative hardware development."

Gordon Reid, Managing Director, Cedar

Overview

The technology behind DNS processing removes audio artefacts by splitting the signal in each channel into many spectral bands, each of which contains numerous filters. Each band is then processed in isolation, allowing different noise reduction settings to be used in each.

With the DNS 8 Live, you get eight channels of real-time processing, and each channel is able to 'learn' a noise and calculate its own filter settings automatically. This takes seconds to set up, and usually sounds amazing right away.

Simplicity is best friends with smooth and easy live sound, and having only two controls for any processing device is about as simple as it gets! But if you want to have more control, there is a detailed mode available where you can tweak the band controls individually for each of the eight processing channels.

Offering worldwide compatibility, the unit can run off standard 12V or mains voltages from 85v to 260v, so it's equally at home in a studio, ENG unit, or film set. Plugging in an AC supply and a battery at the same time gives you a private UPS, as the unit will continue to operate and process audio flawlessly if the mains supply fails.

The audio I/O is strictly AES/EBU, so don't expect to insert the DNS 8 Live into an analogue signal path. Not only does this mean that the latency of the unit is limited to just the processing delay (0.2ms at 44.1kHz), but that it's only 20cm deep and weighs just 3kg. Low heat emissions mean you can't warm cold hands on it, but the power consumption is low at 15W.

You have a choice of two AES_3 inputs: standard digital XLRs (AES/EBU stereo) or a 25-pin D-sub connector conforming to AES59. Audio clocking is automatic and can run from any input; it handles sample rates up to 96kHz, but all the sources must be synchronised together – the DNS won't be happy with different clock sources or un-synchronised AES streams. There is also a standard BNC input on the rear for external clocking, complete with a recessed 75Ω termination switch.

DNS

Once you're hooked up and clocked correctly, operation is via six front panel switches and eight infinite rotary controls that are also push buttons used to toggle which parameter the encoder controls. Of the six buttons to the left of the unit, three are dedicated for use as power, menu, and lock functions. The remaining three switches are assignable 'soft-keys' with various functions defined on the screen.

Now this is where things get a little more 21st century. With a single click these switches perform one function, but go in with a double click or hold for a moment, and a different operation can be accomplished. For instance, you have to hold the power switch for five seconds to turn it off, which is a good safety feature in case something knocks the power switch mid-show. Once you are familiar with the operation of the buttons, the unit is very easy to navigate and set up to taste. There are only a few displays to understand, and the menu system is very simple in its layout, so you can get to audio input settings or word-clock input settings very easily and, more importantly, quickly.

The design of the control system is also very slick and simple. In normal mode, the main screen displays an overview of all eight channels. The currently selected channel can be set to bypass or process, or set into Learn mode with just one soft-key touch. Selecting a channel is as simple as pushing the relevant rotary encoder.

Whilst the overview screen is handy, each channel's individual bargraph display shows what is going on as well – located next to each of the eight rotary controls these displays would not look odd on Picard's enterprise, glowing with an eerie turquoise hue.

How such a small control surface can possibly control the vast brains inside this little 1U box is beyond me, but CEDAR has managed it with flying colours. With just two parameters per channel (in normal mode) operation couldn't be simpler. Once you've identified the noise you want to remove by using the Learn function, it's a case of tweaking the noise level (if necessary) and dialling in the amount of noise reduction you want. By pushing the rotary encoder to toggle which parameter it controls, adjusting either takes just seconds; it's a bit like setting up a noise gate with threshold and ratio controls. You can also create 'Groups' to control multiple channels simultaneously so that, if the noise changes consistently across numerous microphones, you can adjust them all with a single knob, while the 'detail mode' offers a detailed editor for each of the eight processing channels. This allows operators to use the first six encoders to find the areas of the spectrum they wish to manipulate, offering more control, for instance, to remove low end from a signal, or to allow a certain band to pass unaffected. The seventh encoder then affects all of the bands in unison, retaining their relative balance, whilst the eighth selects the channel you want to work with. Whilst in this mode, the main display and the channel displays change to show the levels for each of the six bands, which is a most efficient way to keep the whole operation uncluttered and provides information at a single glance.

If you have some room tone or a piece of audio containing only the unwanted noise, the system can easily 'learn' the noise in a few seconds. I started by recording some spoken vocal in a pretty quiet studio but had a fan heater running as a noise source. I also added in a few computer fans for good measure. By using the Learn function for about a second, the audio was then immediately processed and I was blown away. Not only had the noise totally vanished – I mean absolutely gone – but also the punch and clarity of the vocal was astonishing. I was half expecting some digital artefacts to affect the naturalness of the sound, but there really was nothing odd there at all – it turns a live dialogue signal with this kind of embeeded noise into something that sounds like it's been meticulously manicured and edited to perfection.

Using the DNS 8 Live with a good quality Lynx AES16e soundcard, it quickly locked to 44.1Khz and I really was blown away by the quality and clarity of the audio.

When utilising the DNS 8 Live across a selection of sensitive microphones in a reflective venue, the intelligibility was noticeably increased, and in the studio I even found it useful as noise gates on the toms on a drum kit – as these tend to resonate when not played. Again, latency is not an issue, enabling the unit to be used for any live purposes without, for instance, adversely affecting signals monitored by an artist using IEMs.

The DNS 8 Live acts like an automatic mixer in a sense – eliminating background noise and making the signal sound expensive. At a press conference for a film, it produced results of an unbelievable quality, perfect when combining live reinforcement and multiple press feeds – which need to be crystal clear. The most time consuming part of the process was setting up the digital console's insert points.

Control System

By using a standard Ethernet socket for networking, the DNS 8 Live can be controlled via standard network devices using web-based software. The software was unavailable for the review, but should be released soon.

Firmware updates can also be uploaded to the unit via a standard web interface. This will ensure forward compatibility for some time to come, until the death of Ethernet ultimately. I don't use an iPad, but I dare say it might be possible to create an app to control one or more DNS 8 Lives.

Conclusion

If you need top-notch dialogue noise suppression, there are not many options. Sure, there are some plug-ins that can analyse noise and then remove it from a audio file – but that's not the same thing as a real-time processor of this quality, and the results are also nowhere near as transparent as the DNS 8 Live.

This really is a very high quality product. I absolutely love the design and simplicity of the controls and, once you get used to the way things work, it is effortless to adjust a control. You have to keep tabs on which parameter is selected before you adjust a rotary control, but again this is something that takes no more than a quick glance to affirm.

I could imagine uses in every sector of the live industry, from churches to stadiums to corporate events. The human voice is the one common thread that should sound crystal. This kind of quality is not cheap however: a DNS 8 Live retails in the UK for GB£4,600. Also, keep in mind that, if you're a live user, you will also need to be using some of the AES/EBU channels on your mixing console. Happily most good digital consoles are equipped with enough AES/EBU connections to handle at least one DNS 8 Live. As engineers hear the benefits of this device, the technology will hopefully become more widespread in the live sector.

Information

Feature Set

- **Eight channels of dialogue noise suppression**
- **New DNS algorithm with super-fast two-knob set-up p/channel**
- **Detailed DNS mode**
- **1U rackmount, 20cm depth, 3kg weight**
- **Digital PCM I/O**
- **AES3 on XLR sockets plus DB25**
- **44.1, 48, 88.2, and 96kHz sample rates**

Manufacturer
Cedar Audio
www.cedar-audio.com

Price Details
GB£4,600.00 (exc.VAT/shipping)