USB/Network DAC with DSP modes
Made by: Bel Canto Design Ltd, Minneapolis, USA
Supplied by: Padood Ltd, Cambridge, UK
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Web: www.belcantodesign.com; www.padood.com
Price: € 1795

Bel Canto e.One Stream

Part of the Minnesota brand's compact Evolution One series, this 'Asynchronous Network Bridge' can feed a DAC with streamed music, or be used straight into an amp

Review: **Andrew Everard** Lab: **Paul Miller**

Why can't products just be what they claim? Elsewhere in this issue you'll find a high-end network player that's also a very fine DAC [p36], and a very affordable preamp that comes with a built-in tuner and power amplification [p64]. It's all very confusing – and then along comes Bel Canto's € 1795 e.One Stream, launched at last year's Hi-Fi Show *Live* in Windsor, and demonstrated in an all-Bel Canto system with YG Acoustics speakers. An unassuming compact component, its 'half-width' casework impeccably finished in a choice of black or silver, the e.One Stream purports to be an 'Asynchronous Network Bridge'.

We've looked at such devices before in these pages. They're designed to sit between the end of an Ethernet cable and the digital connection to a DAC, or an amp with onboard digital conversion, thus bringing streaming music to a system without the need for an entire network music player [see Investigation, p26].

Erroneously but increasingly frequently called 'streamers' these days, there are a few such devices about, including dCS's Network Bridge [*HFN* Jun '17]. The intention of all is much the same – to update legacy digital systems purchased when the only connection a DAC recognised was S/PDIF on coaxial or optical, typically from a CD transport or player.

ANALOGUE OUTPUTS

Actually, that's what the e.One Stream does: it has an Ethernet port to connect to your network, and a USB-A port to connect storage devices, plus digital outputs on AES/EBU, optical and coaxial connections. Except there's more, for on the rear of this US-built unit [see p55] there's also a pair of *analogue* output sockets, fed from an internal DAC. So what we actually have here is a network player in bridge's clothing, and one compatible with MQA and DSD64 as well as PCM-based file formats up to 192kHz/24-bit.

In adding that analogue capability, and the USB port, the e.One Stream replaces the previous REFStream model, which really was a network bridge – or 'Asynchronous Ethernet Renderer' – with purely digital outputs. The company's Seek app [see screenshots, p53], currently only available for iOS devices, is used to 'drive' the device, whereas the older model relied on third-party UPnP/DLNA control software to play music on the home network. What's more, when used with the Seek app, the e.One Stream can also play Internet radio via the vTuner platform or – with the appropriate subscriptions in place – integrate the Qobuz and Tidal streaming services, as well as managing music the user has cloud-stored using Dropbox or OneDrive.

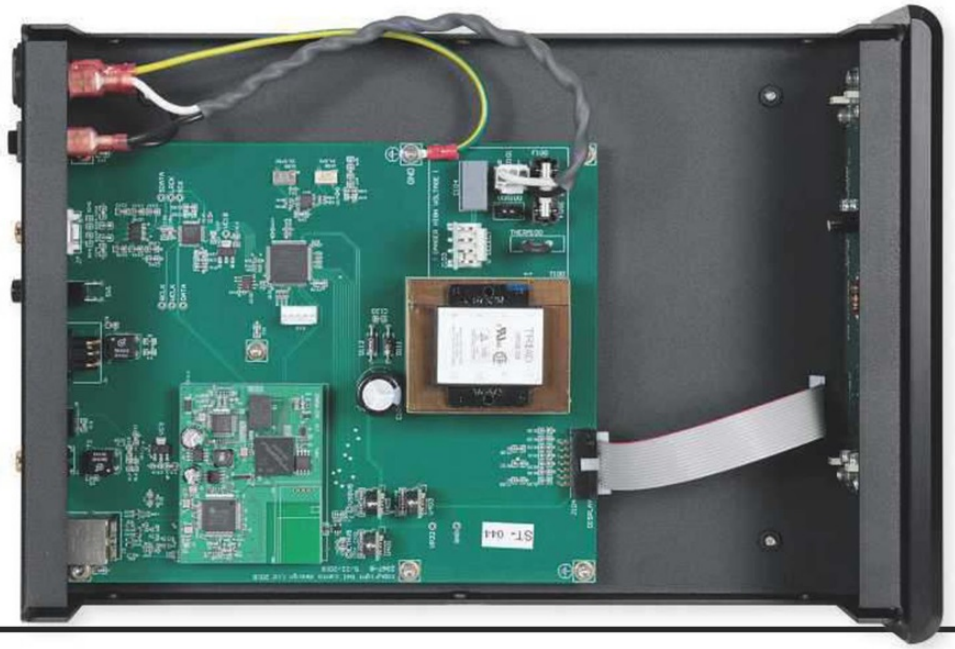
> 'The Stream may turn your expectations on their head'

The idea is that this unit will bring together all your streaming requirements on one seamless platform, and if that pitch sounds familiar, yes – it can also function as a Roon endpoint. And that's almost it as far as the description of the e.One Stream goes, except that the one physical control here isn't quite what it says.

HIDE AND SEEK

Located between the analogue and digital outputs, the 'Program' button [again, see rear panel picture, p55] doesn't actually program anything. In fact a press of around two seconds will send the unit scurrying off to the Internet to check whether any firmware updates are available for it. The same button also toggles the Stream's output between analogue and digital, with a line on the display showing which of these is selected.

The front panel also indicates the source of the content being played, and the format in which it is being received, and can be switched to display track information. Frankly, all that information is on the app, which is much more comfortable than peering across the room. The Seek app is a good example of its kind, and makes the e.One Stream a pleasure to



RIGHT: A DLNA/UPnP receiver module (from ConversDigital) supports Apple AirPlay, Spotify Connect, Roon and MQA [lower left]. The main PCB hosts TI's SRC43821 asynchronous sample rate converter and PCM5102A DAC [top left]

LEFT: You'll look in vain for any controls on the front of the Stream: all there is within that chunky fascia is a display of source, file format and sampling rate, plus the output mode chosen. Control over music content is in the hands of the 'Seek' app [pictured below]

use, allowing relatively seamless transitions between the various streaming services and music stored on the home network.

The app might not offer the comprehensive integration of Roon, for example, as it presents content from a local library, Internet radio, Qobuz and Tidal on separate screens. However, unlike some simpler designs, which might involve some juggling between apps, this one at least puts all the services in one place, making it simple to flick between them. Furthermore, here you have hardware capable of handling both Tidal's MQA-based Masters and Qobuz Sublime+ streaming, given the relevant subscriptions, so there's no need to settle for lesser formats when you rely on streaming to play your music.

The rest of the device is as simple as you like. There are no front-panel controls, and aside from the 'Program' button, nothing more than a power switch at the rear. Connect it to your network then your DAC, or an amp's analogue inputs, leave it to power up and you're done. On first boot, our review sample required a firmware update. Fortunately this was accomplished quickly via the Seek app, after which the Stream rebooted and was ready to go.

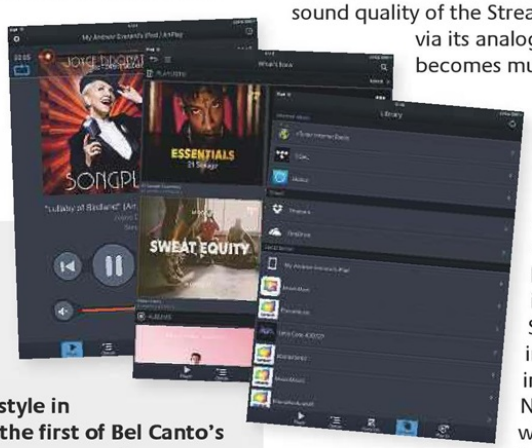
The external simplicity is echoed within, with quite a bit of fresh air surrounding the single main circuitboard, and the two subsidiary boards mounted on it, containing the DLNA/UPnP receiver module and the DAC feeding the analogue outputs.

WHOLE TRUTH

It's usual in reviews of digital in/out network bridge devices to comment on the difficulty of describing the sound they deliver, as the DAC to which they're connected typically has a much greater influence on the presentation. That's very much the case here, with the e.One Stream having no discernible effect on the sound, for good or bad, when used as a purely digital bridge. I had to hand for comparison the excellent little Pro-Ject Stream Box S2 Ultra [*HFN* Oct '18], the winner of a 2018-19 EISA Award, and packing its own digital 'detoxer', and flicking between this and the Bel Canto showed the two were very much on a par.

However, with the choice of analogue or digital outputs here, and the possibility that some users may buy this unit to connect straight into an amp or preamp without a DAC in between, the innate sound quality of the Stream when used via its analogue outputs becomes much more relevant. And the good news is that, far from being an afterthought in an otherwise all-digital device, the analogue output here is very good indeed. I tried the Stream connected into the digital inputs of a Naim NDS, a device with which I am very familiar, and in analogue guise straight into my usual Naim NAC52/52PS preamp, feeding a NAP250 into Neat Iota Xplorer speakers [*HFN* Jul '18]. In these configurations I used it both as a UPnP renderer and as a Roon endpoint, and in all iterations the compact black box gave a very good account of itself.

The analogue outputs offer a fine combination of respectable treble and midrange detail and bass drive, all integrated into an attractive, musical whole. Sufficiently impressive, in fact, that ⇢



KEEPING IT COMPACT

The Stream is part of Minneapolis-based Bel Canto Design's longstanding 'compact-format' e.One (Evolution One) range. These entry-level offerings slot in below the Black [*HFN* Feb '17] and Black EX ranges and are designed to offer 'more features, flexibility and performance than ever before with both budget and lifestyle in mind'. This ambition is reinforced by the e.One Stream – the first of Bel Canto's products to be partnered with its iOS 'Seek' app. This free app organises your playlists, favourite tracks and Internet radio stations so they are readily accessible from your iOS tablet or phone [see inset screenshots].

Bel Canto's e.One lineup is still 'Made in the USA' and stands out from the pack with its solid casework and – in particular – front panel, especially striking in the black of the review sample seen here. The e.One range includes the CDt CD transport, DAC 2.7 DAC/preamp and companion amplifiers. The one-box amp solution is the 60W C5i, which has both digital and analogue inputs, and there's also a choice of power amps: the REF500S, rated at 250W/8ohm and 500W/4ohm, and the REF600M monoblock, at 300W/600W into 8/4ohm. Completing the range is the e.One Phono [*HFN* Jun '18], a dual mono phono stage with gain and loading adjustable using rear-panel dip-switches.

ABOVE: Digital ins are limited to USB-A (for an external memory stick or hard drive) and RJ45 (network). Outputs, selected by the 'Program' button include AES (XLR), optical and coaxial digital plus fixed-level single-ended analogue audio on RCAs

they turn expectations on their head – you might put the Stream directly into your system as a very good network player, with a view to later upgrading it with a high-end DAC.

Play a selection of music through the e.One Stream's analogue outputs, and it's hard not to enjoy what it does. With the Christian Balvig 6-tet's atmospheric *Music For Humans* set [Amp Music AT022; 88.2kHz/24-bit], the bass of Jens Mikkel Madsen is delivered with suitable sonority, but also with taut definition, while the drums of Siv Øyunn Kjenstad have good weight and punch. All the while, the subtlest touch of stick on skin or cymbal is rendered clearly, so while the soundstage image is slightly less focused than with a top-end network player, there's a fine 'presence' and the sense of musicians playing off each other left entirely intact.

TEMPTING UPGRADE

Switch to some mainstream rock or pop, and the e.One Stream is also persuasive, if more light on its feet than truly room-shaking. The Page/Jones/Bonham powerhouse on the *Rock And Roll Highway* compilation [Sazanshi Entertainment QACL-30013] loses some of its swagger and brute force – and that's without the almost comical effect of the resolutely two-channel recording and the less than spectacular vocals!

Other players make more of the impact of, say, the opening of 'Wailing Sounds', whereas here it sounds sprightly enough, but just a little shy in the slam department. And there's some confusion when the mixes get busy. At the same time, the treble end of the spectrum also plays things just a tiny bit safe, with the result that big atmospheric recordings can sound rather drier than I would prefer.

Whether with the rich cathedral acoustic of a recent 2L choral recording, the Nidarosdomens jentekor/Trondheim Solistene *Lux* set [in DSD64 from 2L-150-SABD], which sounds just a little anonymous, or the crisply recorded violin and piano on Rachel Barton Pine's *Blues Dialogues* [Cedille CDR 90000 182; 96kHz/24-bit], there's just a sense that the last vestige of space and ambience has gone MIA.

That said, the e.One Stream has a great deal to commend it. Its sonic balance when used via the analogue outputs means it will slot easily into many a system, while it also has that ability to be used as a purely digital component into a high-quality DAC at a later date, thus offering a tempting upgrade path.

HI-FI NEWS VERDICT

The e.One Stream may seem a simple device, and for the DIY-inclined there are less expensive ways of delivering a similar service, all the way down to a Raspberry Pi or Tinkerboard running Roon. However, add the elegance of the Qobuz and Tidal integration, the excellent Seek app and its analogue/digital flexibility, and the price starts to look more sensible – at least by high-end audio standards.

Sound Quality: 82%

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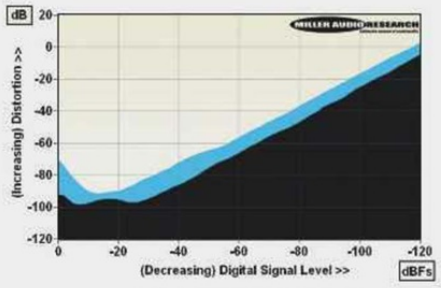
LAB REPORT

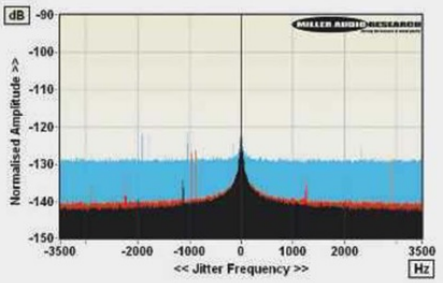
BEL CANTO E.ONE STREAM

Bel Canto is making excellent use of ConversDigital's CDMCM-2121 DLNA 'Complete Audiophile Receiver Module' here, mounting this comprehensive network audio solution on top of its own DAC board [see inside picture, p52]. While Bel Canto's free Seek app runs on Apple's iOS only, ConversDigital offers its own 'mconnect Control' App, available for both iOS *and* Android platforms. For the purposes of testing, I employed the Seek app on an iPhone which quickly provided access to test files over both network and via a memory stick in the USB-A port. In both instances, and over all sample rates from 44.1kHz-192kHz, jitter was remarkably low at <10psec, although some uncorrelated (noise-like) jitter is evident from the broadening of the J-test signal [see Graph 2, below]. The partnering PCM5102A DAC is employed here using its integrated line-driver output and while the chip is described by TI as a '112dB Audio Stereo DAC', in this instance the practical A-wtd S/N ratio was a ~17-bit 101.5dB.

Subjectively, and with useful musical detail rarely captured at this level, a little extra white noise is often no bad thing for digital audio. Otherwise, the 2.08V maximum output meets TI's specification but the 470ohm source impedance is still sightly high. Distortion is held to a steady 0.002-0.003% over the top 30dB of the Stream's dynamic range through bass and midrange frequencies [see Graph 1, below], increasing only over the top 10dB of its range at very high frequencies (0.03%/20kHz/0dBFs). The linear phase digital filter offers a 63dB stopband rejection (re. 20kHz at 48kFs) and an extended response reaching out to –0.13dB/20kHz with CD/48kHz files and to –2.8dB/45kHz, and –4.4dB/90kHz, with 96kHz/192kHz media, respectively. PM



ABOVE: Distortion versus 48kHz/24-bit digital signal level over a 120dB dynamic range (via Ethernet and USB-A at 1kHz, black; 20kHz, blue)



ABOVE: High resolution jitter spectra using 24-bit data (48kHz, black; 96kHz, red; 192kHz, cyan)

HI-FI NEWS SPECIFICATIONS

Maximum output level / Impedance	2.08Vrms / 465-476ohm
A-wtd S/N ratio (Ethernet / USB-A)	101.5dB / 101.5dB
Distortion (1kHz, 0dBFs/–30dBFs)	0.0025% / 0.0017%
Distortion & Noise (20kHz, 0dBFs/–30dBFs)	0.028% / 0.0079%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0 to –0.1dB/–2.8dB/–4.4dB
Digital jitter (48kHz/96kHz/192kHz)	<10psec / <10psec / <10psec
Resolution @ –100dB/–110dB	±0.4dB / ±1.5dB
Power consumption	6W
Dimensions (WHD) / **Weight**	216x88x305mm / 7kg