AUDIO FILE

Naim NAC-N 272

The second network music preamp from Salisbury is a more sophisticated affair than the original NAC-N 172 XS and, as a result, it's a rather more compelling buy
Review: **Andrew Everard** Lab: **Paul Miller**

When it comes to network audio playback, Naim seems determined to fit that old TV ad line 'Yes, madam, we have all the colours in all the sizes'. You can have your streaming in combined ripping/storage devices, in all-in-one systems from the Uniti range, as separates players in the ND range, and even as network-capable preamplifiers. This last group started with the £1695 NAC-N172 XS, launched getting on for three years ago, and it now has its second member, the rather more ambitious NAC-N 272 at almost twice the price.

I don't think I ever quite 'got' the NAC-N172 XS. It's based on the NAC 152 XS preamp [*HFN* Feb '11], which sells for around the £1000 mark, to which it added network streaming and a range of digital inputs, but to me has always had a slight air of the 'horse designed by a committee' about it. I always felt anyone with an existing Naim system would probably do better to consider adding the ND5 XS network player [*HFN* Sep '14]. And those looking for a neat solution as a first streaming purchase might want to consider the NaimUniti2 (if they wanted CD playback as well) or the SuperUniti for enhanced performance.

Anyway, what do I know? The NAC-172 XS picked up some rave reviews, and now the NAC-N 272 takes the concept on to the next stage. Selling for £3300 as standard, or £3595 with optional DAB/DAB+/FM radio tuner module installed, the new model is part of the company's core 'Classic' range, rather than the entry-level 'XS' line-up, yet has some distinct differences from both past Naim preamps and its network music players to date.

For a start, this is the first Naim network product able to handle DSD files. Admittedly these have had little impact on the consciousness of general music buyer,

but they have gained a following among a sector of the high-end audio community.

A number of sites now offer DSD downloads for sale, including Norway's 2L, Channel Classics, Blue Coast Records and the e-Onkyo music store, and there are also enthusiasts who are using a slightly convoluted method involving Sony's PS3 games console (but only a hacked model, and only running certain versions of its firmware) to rip DSD from the SACD discs for which it was originally developed.

DSD FILES SUPPORTED
This method is a long way from simply slipping a CD into a computer drive and firing up ripping software (or indeed using a dedicated ripper/storage device such as Naim's own HDX or UnitiServe). But it's possible to store SACDs on a hard drive for streaming just as easily as one can with CD-derived or downloaded music files.

Perhaps better-known in the 'Macs and DACs' world – *ie*, to those listeners

connecting their computers directly to a digital-to-analogue converter and thus to their systems – DSD is now increasingly supported by streaming server packages such as MinimServer and TwonkyMedia. This means that it's possible to stream this content, as well as high-resolution PCM, from a computer or NAS over a home network, to devices such as the NAC-N 272. Or at least it is with enough network bandwidth: wired connections are more or less *de rigueur* for this kind of playback, in my experience, simply because Wi-Fi struggles. It's not a sound quality thing, but a stability/buffering one.

The NAC-N 272 will handle DSD64/2.8MHz files (both DFF and DSF, the latter having the advantage of being able to carry meta data), but not the DSD128/5.6MHz or even DSD256/11.2MHz offerings now available from some of the DSD enthusiast music vendors. (For more on how these files are handled, and the upsampling of other formats, see boxout.)

RIGHT: Four separate transformer secondaries feed regulated supplies for the analogue, DAC and two digital rails. The analogue and digital (signal) sections of the '272 are linked using fast opto-isolators to reduce mutual interference
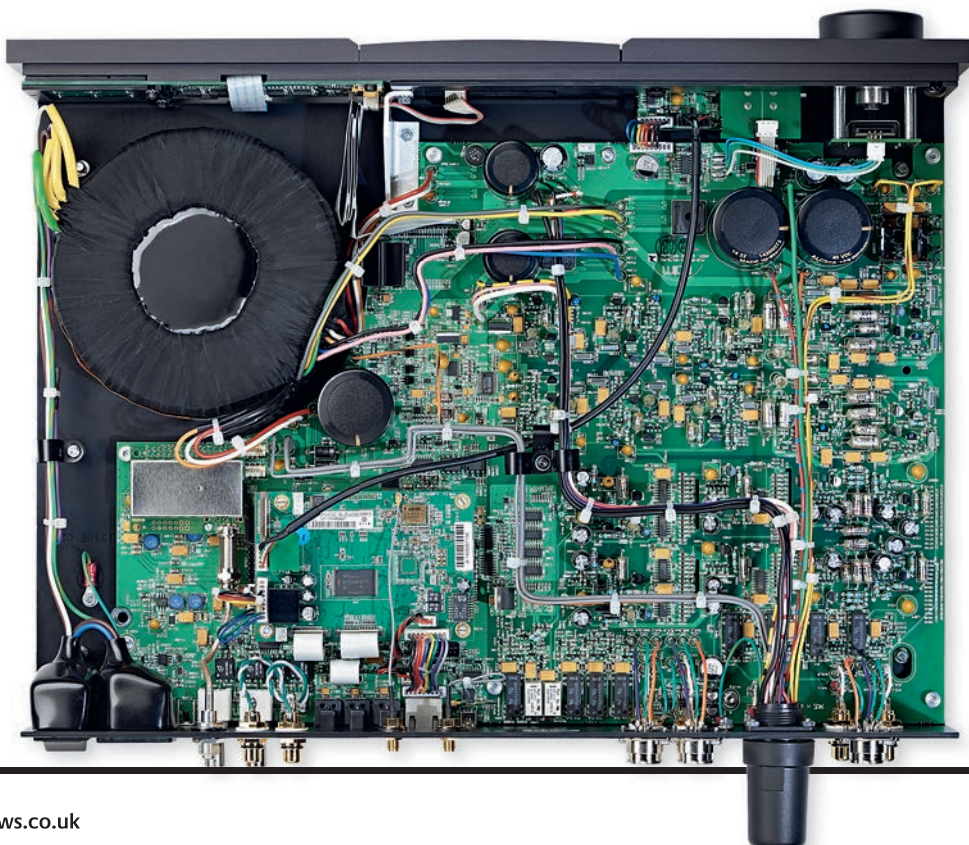
Other new features here include the Spotify Connect compatibility recently rolled out to other Naim network products in the wake of the introduction of the company's mu-so all-in-one system, and aptX Bluetooth for wireless connection to computers, smartphones and tablets. Separate antennae are provided for Bluetooth and Wi-Fi, along with an Ethernet port for wired networking. And there's also a front-panel USB Type A socket which is both iOS compatible and usable to play music from USB storage devices.

INTERNET RADIO
The familiar internet radio functionality is provided by the vTuner platform, with Naim's usual customisation to provide Naim's choice line-up of stations the company feels will appeal to users. At the time of writing, the internet radio part of the package was in a less than ideal state. This was due to the ongoing shenanigans surrounding the BBC's reorganisation of its streamed audio functionality, under the Audio Factory banner. This has had the effect of disrupting the access of some internet radios to its services, and has been the subject of some head-scratching and

re-working by affected companies, including Naim – see Investigation, p22.

The NAC-N 272 also provides three coaxial and three optical digital inputs, which are 192kHz/24-bit capable. However, there's no asynchronous USB connection for a computer, which would have been handy. There are also two sets of analogue inputs, on both RCA sockets and Naim's preferred DIN connectors, and it's possible to adjust the input trim on each of these. Or you can select one or both as a fixed-level AV bypass input (for example when connecting the front left/right preouts from an AV processor or receiver).

The same choice of RCA or DIN sockets is offered for line- and preamp-level output, but there are no XLR analogue outs, which might have extended the appeal of the preamp to those wanting to use it with power amplifiers from other brands.

Naim uses XLR connectors on some of its power amps (one to serve both channels on the NAP 250, one for each channel on the NAP 300 upwards), but it sticks to DIN outputs on its preamps. However, just as suitable cables

'Its sound mixes detail and rhythmic drive with subtlety'

ABOVE: Front panel layout is familiar Naim stuff: volume control, USB-A in and headphone output to the left, display and control buttons to the right. It's best driven with the n-Stream app

to connect to its own amps are available from Naim, so there are also third-party manufacturers able to supply cables to connect Naim preamps to amplifiers using XLR inputs, if required.

POWER SUPPLY OPTIONS
The NAC-N 272 can also be upgraded with one of Naim's power supplies after removing a linking plug. Unlike other Naim preamplifiers (which are powered either from a suitable Naim power amp or come with their own power supplies, with HiCap, NAPSC or SuperCap supplies available as upgrades), the NAC-N 272 has its own internal power supply. But this can be upgraded with the XP5 XS, XPS or 555 PS – better known as supplies for the company's source components.

Connecting any of these three replaces the internal supply, and the mains connection to the NAC-N 272 must be switched off with an external supply in use. Along with a NAP 250 power amplifier, Naim supplied an XPS power supply for experimentation, and I was also able to press into service the 555PS normally used to provide juice to my NDS network player.

Like other mainstream Naim products, the NAC-N 272 is handbuilt at Naim's HQ, and within, familiar Naim design features are present and correct. The main circuitboard is mounted on shoulder-bolts to relieve any tension in the board, to which end the external analogue connections are also hand-wired to provide mechanical decoupling while a slight bend is employed in the mounting legs of the 1%-tolerance-matched resistors.

Optical isolation is used to exclude interference and at the heart of the ⮑
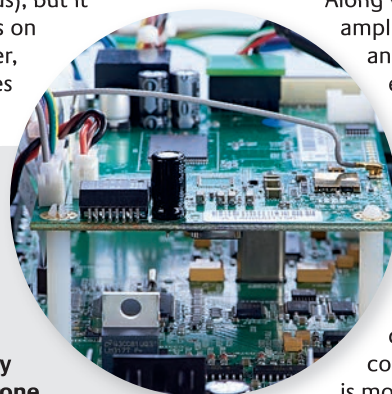
CUSTOM FILTER

Named after two of its long-serving engineers, the Sells/Nilsson filter employed in the Naim NAC-N 272 comprises a brickwall IIR filter running on a SHARC DSP (just visible on the lower PCB here) with a gentle 6th-order analogue filter feeding the output. This IIR filter is a phase-linear type with almost no pre-ringing and, therefore, very little acausal distortion – a suspect in the 'digital sound' that irritates many audiophiles. The filter increases all incoming sample rates to one of two elevated base rates – 768kHz (for 48k/96k/192kHz media) and 705.6kHz (for 44.1k/88.2k/176.4kHz media and DSD64 files). The Burr-Brown PCM1792A DAC, used here in current output mode and with discrete I-to-V conversion, may handle 768kHz/24-bit data natively but the NAC-N 272's response does not stretch out to 45kHz (with 96kHz media) or 90kHz (with 192kHz media). Instead, Naim's custom IIR filter coefficients cut in earlier, delivering a 60th-order roll-off at 25kHz [see Lab Report, p33]. PM

JON GREEN

Jon Green, Naim's Principal Electronics Engineer, has been with the company for three years, following spells with Philips, Cyrus and IAG. Asked where the NAC-N 272 sits in the Naim preamp hierarchy, he explained that 'the model number should indicate where it's positioned, but with the addition of an external PSU it's seriously good.'

He says that once the decision had been taken to add DSD capability, 'the implementation wasn't too hard but its optimisation was. DSP code at this level is science with an element of art – and it's the art that makes it interesting.'

As for the arrival of DSD in other SHARC-based Naim products, 'Updates are currently in limited public beta, and when these are complete we will release. We try not to set targets as Naim owners beat us up if we slip!' So where does Naim go next? DSD128? MQA? Green says 'Never say never. We don't see much music we would like to listen to coming out exclusively on high rate DSD and so far MQA is not quite a commercial reality.'

And when it comes to adding extra streaming services, such as Tidal and Qobuz, 'The key for us is to implement services really well while being cautious of vendors that might hold us to ransom with constant service code changes. We take updates very seriously and don't wish to issue too many – it's resource-heavy for us and an inconvenience to our owners. So we are looking to have new streaming partners, ones that can implement a "connect" style of control.'
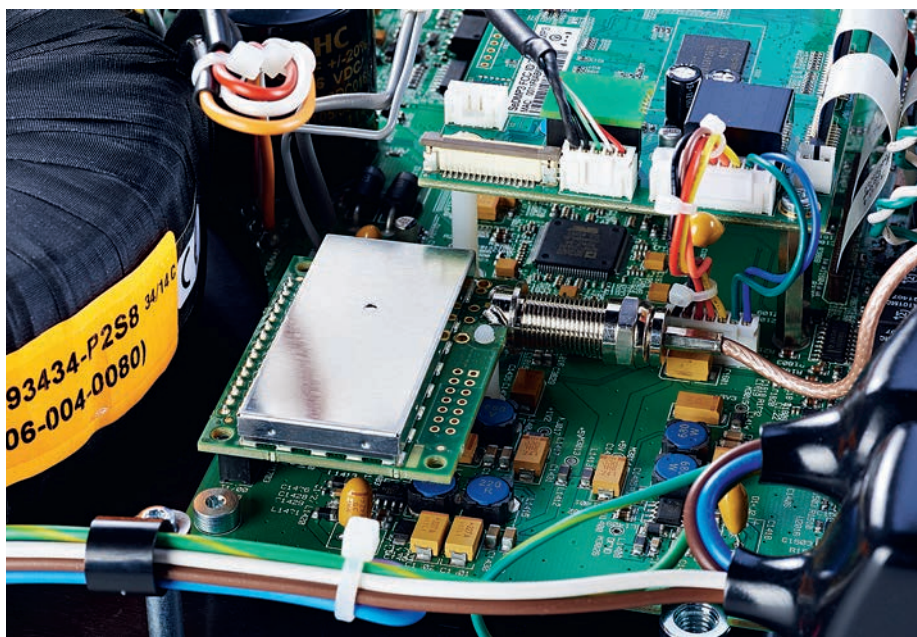
ABOVE: Naim's UPnP network connection is screened on its own daughter board and will accept 32-bit floating-point WAV files as well as standard-resolution 2.8MHz DSD files (also via USB-A input)

device sits a SHARC processor running DSP derived from the company's NDS network player, the processor also used in models including the NDX, ND5 XS and SuperUniti.

Naim's Statement amplifier informs the design of the volume control, which uses an analogue resistor ladder under digital control, while a Class A headphone amp is also included, designed to increase output current drive when headphones are plugged in, allowing even tricky headphone loads to be accommodated. In other words, the NAC-N 272 is an analogue preamplifier with a range of digital input options onboard, rather than taking the easier all-digital path.

♪ A NAIM SOUND?

Using the NAC-N 272 is no harder than operating one of the Naim Uniti range. As usual, there's a compact handset supplied, but to get the best from the preamp, and its network capabilities, it's better to use the company's n-Serve app, available for iOS and Android devices. And for those outraged that one needs to spend the price of an iPad just to use the product, as I am writing this I am 'driving' the Naim using a very cheap Android tablet: the Asus MeMo Pad 7. It costs all of £80, and it works beautifully.

In five words, the sound quality can be summed up as 'Well, it sounds very Naim', which will come as some relief to those looking to upgrade an existing system

to streaming, and do nothing for those who just don't get on with the way Naim systems play things. I have to say that I'm not a great believer in there being so divisive a thing as 'a Naim sound'. Rather, the NAC-N272 – whether used as intended with a power amp or via its fixed outputs as a source (as I guess one might do during an upgrading phase) – has a sound combining plentiful detail and rhythmic drive with subtlety and refinement, plus a clean, tightly controlled but well-extended bass.

That makes it a reliably informative and attention-grabbing listen, and also means it's as well-suited to the intricacies of classical music as it is to the kind of singer/songwriter-through-to-rock content Naim tends to favour for its product demonstrations.

Even better is that the design of the digital signal handling effectively makes the NAC-N272 'input-agnostic' – it sounds the same whether you use the USB, S/PDIF or network streaming inputs. It also does a pretty good job when using Bluetooth.

I wasn't able to make all the direct comparisons I wanted to with the NDS flagship network player as, at the time of writing, mine was awaiting the firmware and DSP upgrades to allow it to handle DSD. But with files up to 192kHz/24-bit, the 272 gives a good account of itself, even if it doesn't quite have all of the much more expensive player's bass conviction ☞

> 'It delivers with everything from CD rips to high-res downloads'

ABOVE: Phono (RCA) connections and DIN sockets are included for analogue input and output, but Naim also offers six digital inputs (three coax/three optical), a wired Ethernet connection and three antenna inputs: Wi-Fi, Bluetooth and optional radio

or fine detail and presence. However, it does impress, even with hoary old chestnuts such as Jeff Wayne's *War Of The Worlds* in DSD64 [Columbia DPCD960000], which comes up fresh, thanks to the added dynamics and impact the format can bring, and fair powers out of the speakers.

Similarly, the DSD release of Pink Floyd's *Wish You Were Here* [Analogue Productions CAPP 33453 SA] is full of details one might overlook on the CD version, and gains from the way the Naim allows the subtlest information to be heard. But it can also deliver all the slam of a track when required.

CLOSE TO THE FLAGSHIP
What's more, with delicate acoustic music, that torrent of information ensures a vibrant sound with bags of presence, with pianoforte having an entirely natural weight and sonority when required, and a close-up view of vocal techniques and phrasing.

So, the NAC-N 272 makes a solid case for DSD, but given the minority interest in single-bit audio, it's encouraging that it delivers with everything from CD rips right up to high-resolution downloads. Yes, it gives away those diminishing returns to the NDS when it comes to absolute three-dimensionality of soundstaging, and the focus of performers set within the stereo picture. But considering the price differential it's pretty close – and gets even closer when you start adding on Naim's power supplies.

Combined with the XPS I'd say it was about 75% there. Bolt on the same 555PS power supply the NDS uses, and you're into the mid to high 80s of the NDS's performance. The main gains? No, not a night and day boost in bass or whatever, but just a noticeable improvement in the solidity and presence of the sound: a filling-out of timbral character and even more ease in the way music is delivered. (Not that the 'naked' 272 ever seems to be working too hard to do what it does so well.) Mind you, the gap may open a little wider

again when we get to hear what an NDS can do playing DSD files.

But it's hard to argue with what the NAC-N272 does and the value for money it offers to the Naim owner wanting to upgrade their system to network capability without increasing their box-count, not to mention its ability to create a complete streaming/amplification system when used with, say, a NAP 200 or the NAP 250 I used for this test, giving an overall price of around £5500-£6700.

To these ears, the NAC-N272 is a much more convincing package than the NAC-N172 XS, with little sign of compromise even when used via its analogue inputs, and real star quality when working digitally, be it from a network server or a USB storage device shoved into the front port.

It's not perfect: to keep everyone happy, I guess an asynchronous USB input and balanced analogue outputs would have helped. But then, those features aren't found on any of Naim's existing network audio products, so it's no surprise they don't feature here. However, the NAC-N272 is both an excellent performer and – within the parameters of the Naim catalogue – offers excellent value for money.

If the NAC-N 172 XS has something of a surprise success for the company, this new one deserves to do even better. ⏻

HI-FI NEWS VERDICT

Yes, Naim already has one network preamp, but the NAC-N 272 is an altogether more advanced, and accomplished, offering than the NAC-N 172 XS. It has wide-ranging input flexibility, and sounds equally good across all its digital connections, from streaming to USB stick playback, and whether with CD-quality rips or downloads, or high-resolution content. Its DSD capability is pure icing on this richly-featured cake.

Sound Quality: 85%


LAB REPORT

NAIM NAC-N 272

All digital inputs are processed via the same upsampling/jitter-suppressing 40-bit code and pass through the same PCM1792A DAC, a regime that's so effective there's no significant difference in performance whether data is delivered via S/PDIF, USB-A or (wired) network connections. It is worth using the pre-out rather than line-out DIN/RCAs, however, as the former offers a sub-1ohm impedance (increasing to 70ohm/25Hz), the latter a high 588ohm. Tested as an analogue preamp, the NAC-N 272 offers a mere 0.007-0.011% distortion (20Hz-20kHz), a maximum 9V output, a –0.6dB/20kHz and –16.2dB/100kHz response and a 97.4dB A-wtd S/N ratio (re. 0dBV). The DAC performance fits within this 'envelope' with distortion at 0.0006-0.002% (1kHz, 0dBFs to –30dBFs) and 0.001-0.03% (20kHz, 0dBFs to –30dBFs) [see Graph 1, below].

Naim's custom digital filter [see boxout, p29] acts earlier than is typical, providing reduced attenuation of stopband artefacts immediately adjacent to the top-end of 48kHz recordings (just –44dB at 26kHz re. 22kHz) and restricting the response of both 96kHz and 192kHz digital audio to a –3dB point of 25.2kHz. Lower 44.1kHz and 48kHz sample rates feature a –1.15dB roll-off at 20kHz. The NAC-N 272 has no balanced outputs but the A-wtd S/N ratio and low-level resolution are still excellent at 108dB (re. 0dBFs) and ±0.1dB (100dB range) respectively. And jitter? All inputs are suppressed to a mere 35psec (48kHz) and 40psec (96kHz) [see Graph 2].

Readers are invited to view a comprehensive QC Suite test reports for the preamp, S/PDIF and Network performance of Naim's NAC-N 272 by navigating to *www.hifinews.co.uk* and clicking on the red 'download' button. **PM**
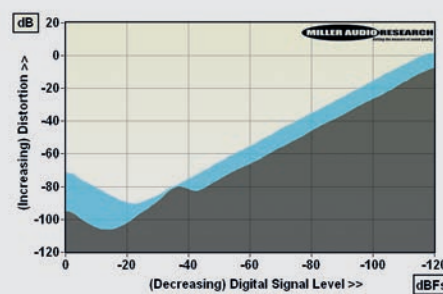
ABOVE: Distortion versus 24-bit/48kHz digital signal level over a 120dB range via S/PDIF and network connections (1kHz, black; 20kHz, blue)
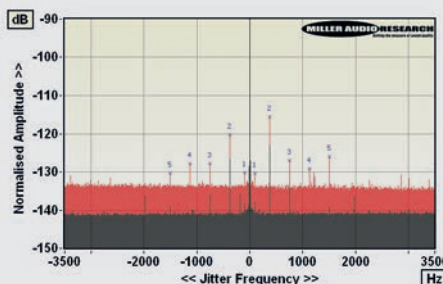
ABOVE: High resolution jitter spectrum via S/PDIF and network inputs (48kHz, black; 96kHz, red)

HI-FI NEWS SPECIFICATIONS

Maximum output level (preamp)	8.9Vrms at 0.9-70ohm
A-wtd S/N ratio (Pre / S/PDIF / Net.)	97.4dB / 107.7dB / 107.6dB
Distortion (1kHz, 0dBFs/–30dBFs)	0.002% / 0.003%
Dist. & Noise (20kHz, 0dBFs/–30dBFs)	0.03% / 0.0012%
Freq. resp. (20Hz-30kHz, preamp/DAC)	+0.0dB to –1.5dB/–12.5dB
Digital jitter (48kHz / 96kHz)	35psec / 40psec
Resolution @ –100dB	±0.1dB
Power consumption	20W (<1W standby)
Dimensions (WHD) / **Weight**	432x87x314mm / 12.5kg