A Simple Network Music System by Naim

THE UNITISERVE AND N-DAC COMBINATION, BY MARTIN COLLOMS

Naim's approach to server audio differs from the rest of the market, reflecting the company's long held view that in the main, higher quality separates are the key to superior musical performance. Many Naim components include significant upgrade potential via a series of optional outboard power supplies that offer worthwhile sound quality improvements. And the company has recently added a couple of 'apps' (software 'applications' that run on the latest mobile 'smartphones' and tablets) that can certainly improve control ergonomics. Recently Naim's universal *n-Stream* control app and *n-Serve iPad* app in particular, have become available from the iTunes store as free downloads. With the NaimNet system concept also starting to show signs of maturity, it seemed appropriate to discover how hi-res and computer audio networks could be operated with Naim Audio electronics.

Ironically we have been here before with a high-res and home network-capable Naim unit, the £4,695 *HDX* (*Vol2 No5*, in 2008), which we then operated as a CD player and as a ripping hard drive unit with audio output. At that juncture it failed to make much of an impression on us, but then we didn't have the resources to work the music network capability, nor were sufficient tracks available usefully to exercise its 24bit/192kHz hi-res audio potential. (Three years on and the *HDX* has probably enjoyed some manufacturing run improvements.)

Since then music streamer technology has advanced to the point where many new customers are seriously committing themselves to it, and sales of both standalone CD players and CDs themselves are falling. Even serious audiophiles are contemplating the attractions of a central store of easily accessed and accessible music, some sourced from their library and some downloaded, handled by an attractive user interface (a remote control and music file app conveniently loaded on some *pad/pod/phone* or equivalent).

Several different possible alternative network system configurations are available, even with Naim products (hence much of the confusion!). We chose modest components which have both upgrade and audiophile potential. With a *UnitiServe* priced at £2,095 and a *DAC* costing £2,100, our installed system budget came to about £4,200 plus installation costs and network accessories, and with an obvious £3,195 upgrade option by adding an *XPS* power supply to augment the *DAC*.

New Baby Server

The central component in this review is the *UnitiServe*, which is in principle a clone of the *HDX* but lacks analogue audio outputs. It's therefore an unusual form of network unit that might be described as a 'hard disk server', but which is also a player, in that it does supply an S/PDIF digital audio output via a BNC co-axial socket, and is therefore able to drive an external high quality DAC (in our case Naim's own predictably if unimaginatively titled *DAC*, hereinafter referred to as an *n-DAC*, to avoid confusion and ambiguities). The *UnitiServe* is also a very capable UPnP server, facilitating playback from other UPnP renderers on the internal or home network, known as a LAN (local area network).

That playing capability means that it can access network files, other drives, streamed sources such as internet radio, and may be remotely controlled by an 'app'. (The *Naim's Choice* internet radio feature, which pre-selects a number of higher quality internet radio stations, will be running by the time we go to press.) It has no front panel controls save power off, though an RC5-protocol remote control may also be used, preferably in conjunction with a video monitor to show what is going on. This could be a compact unit, or alternatively a large wall mounted device for superior readability. These accessories will have their own switch mode supplies which may need attention with filters.

The very versatile *UnitiServe* also includes a high quality CD 'ripper'. Discs are loaded *via* a slot in the front panel, and then read to a mechanically and electrically noise suppressed 1TB hard drive. To avoid inadvertent loss of data or file corruption this drive is intentionally protected from an owner adding externally sourced files to it. Conversely

MARTIN COLLOMS

UnitiServe will catalogues all connected and accessible (*ie* USB or LAN located) external files to its central indexing and search facility, backed up by 'look-up' to internal and internet accessible music databases.

It's also possible to rip and copy to an external backup drive, under computer control. There are four USB sockets at the back. Low power consumption and/or self powered USB memory sticks and hard drives (the latter preferably with their own power supplies) may be connected. After an interval (up to a day, depending on the number of files first accessible to it), the *UnitiServe* updates its catalogue and they all become transparently accessible to the control apps. With something like 600GB of new material, this can take an hour or two, so be warned: it isn't broken; just thinking!

That streamed S/PDIF output is no afterthought, but a properly timed clean signal of audiophile quality, and our choice was to feed it to the *n-DAC* to complete the audio replay function. This arrangement is 24-bit/192kHz capable. It also worked well with the Rega *DAC*, a usefully good value alternative (reviewed this issue). Note too that Naim *SUPERNAIT* integrated amplifier has an S/PDIF digital input, which also neatly dovetails with the *UnitiServe*. There is also an optical output, which will not carry the highest sample rates and generally does not sound as good, as we subsequently discovered; no surprise there.

It can be argued that the heftier supplies plus a more advanced internal design may help an *HDX* deliver slightly cleaner S/PDIF signals than a *UnitiServe*, but by all accounts the difference is not huge. Not the usual tinny-cased, adapted microcomputer, the half-width *UnitiServe* is a substantially built but usefully compact unit designed as an audio component. And while it does have an external switch-mode power-brick supply, Naim has included a custom filter in its detachable miniature three-pin mains cord to reduce RFI effects. (It's possible that an alternative low noise linear 12V/5A supply may become available.) The unit is grounded.

The *UnitiServe* has much of the technology and functionality of the *HDX* but omits the latter's small display. That it is something of a computer after all is revealed on the back panel, where can be found serial RS232 and PS-2 mouse and PS-2 keyboard connections plus video output, monitor signals on S-Video, Composite and 'D' VGA. It is supplied with a *Windows* program called Naim Desktop Client, which can be used to control the *UnitiServe* or for general housekeeping duties. The *UnitiServe* runs code licensed from DigiFi which runs on a *Windows* CE media platform.

It will run and use the following sources: CD, CD-R, CD-RW; digital audio formats supported include WAV, AIFF, FLAC, ALAC, OGG Vorbis, AAC, Windows Media-formatted content files, and MP3. Supported sample rates include 44.1kHz, 48kHz, 88.2kHz, 96kHz and 192kHz, with native bit depths of 16-bit, 24-bit, 32-bit fixed and 32-bit floating. An internet radio feature is imminent.

We reviewed Naim's *n-DAC* in full when it first appeared in (*Vol4 No1*), primarily assessing it as a CD component, *ie* as a 16-bit/44.1kHz decoder for a CD transport, such as the current Naim *CDX-2*. We found that it performed very well in its class, in fact matching some of the best CD player and DAC replay combinations available. In this present case, used alongside the *UnitiServe* via S/PDIF, it operates as the audio replay output for computer audio material, operating over the whole gamut of digital formats and resolutions. This simply connected two-box Naim combination also has the potential largely to eliminate physical media from the equation, and yet is still able 'play' any CD after a few minutes of ripping to its drive *via* the front slot.

Although the hard disk drive fitted into the standard *UnitiServe* makes very little noise or vibration (unlike many NAS drives), a totally silent variation is also available. The *UnitiServe-SSD*, which costs an extra £255, replaces the hard drive with a much smaller (16GB) high performance, low power solid state memory, necessarily holding the operating system programming and still functioning as a ripping buffer. Here the rips are usually directed onto a remote LAN-connected NAS (network-attached storage). Such a 'motionless drive' is said to give a small improvement in sound quality, and rather more in reliability, though an external NAS hard drive is then mandatory. (And is always advisable for backup in any case.)

The *n-Serve* app includes a volume control that is functional when the audio components are system linked (*eg* to a Naim pre-amp). Working with the standalone *n-DAC*, my system volume control was now *via* the separate remote handset to the Audio Research *Reference 5* pre-amp. (At this point I did miss the slick convenience of the well honed on-board and *Chorus* app-linked volume control which was fitted to the Linn *Akurate DS*.) [Personally, I rather like having a separate handset for each component I'm controlling! – *Ed*]

Self-powered in its standalone form, the Naim *n-DAC* may have the analogue side of its power supplies augmented by a compact *HiCap* (£1,150), or by a full width *XPS* (£3,195, a Burndy cable connected multi-output power supply), leaving its internal power supply to handle the digital side. (The well heeled might even consider using the £5,450 *555 PS* supply, for another modest, but for some important, sound quality improvement.) This effectively creates a range of four *n-DAC*s of ascending performance. Bear in mind that spare slots on the audio rack are needed to accommodate and correctly place such components, including consideration of cable lengths (both S/PDIF

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The System
I ran a recently reconditioned Naim *CDS3*, an MSB *Platinum IV* DAC, Audio Research *Reference 5* pre-amp, Krell *402e* power amp and Transparent and Cardas cables. CD Source was a Meridian *200* transport. Other sources included USB drives and sticks alongside the *UnitiServe*. Loudspeakers included Wilson *Sophia 3*s and Sonus Faber *Amati Futura*s.

and where required the sturdy *XPS* umbilical). Incidentally, the back of the *DAC* has a ground switch; as before I preferred the sound when the ground was lifted in my non-Naim system.

I had planned a physical layout for the review which required a 3m S/PDIF co-ax cable to separate the *UnitiServe* from the *DAC*. Naim made up one with reluctance, but would not endorse it. On test it clearly did not sound as good as the standard 1.2m examples. In theory such a matched co-ax connection should not be too critical of moderate length, but it is, so the quality of this link cannot be taken for granted.

Setting Up
Like the Linn streamer system reviewed last issue (*Vol5 No1*), some relatively inexpensive additional home network components are needed to get it operational. Ideally a dealer will supply these, and for a consideration install the system. For this review I bought three Netgear devices: first, a fast Gigabit switch *GS608 v3*, for positioning close to the *UnitiServe* to help buffer it and other possible components with clean data, and also to link back via 20m of Cat6 cable to the intentionally somewhat remote group of other LAN-connected components. These comprised a NAS drive for backup storage (in this case a QNAP example); and a wi-fi-equipped LAN (local area network), based on the *WGR614 V10* wireless router. (This enables our audio local network to receive commands from the *n-Serve* control app resident on the *iPad* and linked *via* wi-fi.) Finally (because I cannot hard-wire to the house ADSL router) a powerful Netgear *WN2000RPT* Range Extender is also connected to the LAN, which brings in the necessary internet access from the wi-fi-equipped main house router located upstairs (needed for music database lookup, downloading and radio streaming). Most of these network components were deliberately located in or on a cupboard on the far side of the listening room away from the audio components. For their lower RFI noise, I used as many spare transformer type power supplies as I could find for these network units, and also fed them from a secondary ring main, to keep the audio component mains power spur as clean as possible.

It's no secret that the accumulation of wi-fi devices, which constitute bursts of high frequency send and receive transmissions from each device, and also the low cost switch mode supplies which operate most of them, together constitute an increasingly powerful and prevalent source of RFI noise. It is not just your installation, it is those of your neighbours too. From multiple mobile phone chargers to the several computers in the house, printers, solid state lamps, modems, ADSL lines, DECT phones, TV and its ancillaries, the sheer number of devices we own and use create a much higher level of 'electronic smog' than in earlier, less complex times. Each such device adds incrementally to the smog total, and there is an inevitable progressive loss in sound quality, which if not controlled could outweigh even the potential benefit of hi-res formats.

In building this Naim system (and also the Linn network system in the last issue), I checked each stage and operating element for its effect on the sound of my reference CD and LP replay. The latter in particular achieves a serious analytical standard, albeit inevitably bounded by a sensible degree of budget restraint. It would seem that the addition of an operative network installation inevitably introduces a degree of loss to a finely tuned, high quality system. The crucial question therefore is how to control the losses so that the undoubted convenience benefits of a server system may be enjoyed.

I cannot promise that the most committed hair shirt enthusiasts will be wholly satisfied in the light of the compromises that need to be made, even when these are reduced to the practical minimum. And for more critical customers, I think it's essential that a skilled dealer provides support with hands-on advice and ancillary equipments, trials of filters and the like for the home network components and other potential noise sources, to help minimise any possible negative impact. It might seem ironic that the hi-fi filter or suchlike accessory that's required to cure the interference from a router and its power supply may well cost more than the device itself, but that's how it is. These network components were never designed to operate alongside a high quality audio system.

Sound Quality
We began with a simple arrangement comprising the *UnitiServe* on an *iPad* app-controlled network feeding the *DAC* via a Naim S/PDIF co-ax. CDs had been pre-ripped onto the *UnitiServe*; other material and hi-res stuff was resident on a NAS drive. Some USB memory sticks provided convenient support, together with a USB self-powered 1TB low noise, rubber-cased Freecom 3.5" *XS 31973* drive. Self powered USB drives such as this are advised, as this reduces the power draw on the *UnitiServe*, thus lowering internal power supply

noise. Although this is not a huge issue, it's just one element helping to control the accumulation of supply noise in the hi-fi chain.

Playing CD-derived material, the *UnitiServe/n-DAC* combo scored about 65 points, certainly a good level, and fine for a DAC at this price, if a little less than obtained with direct CD player S/PDIF drive (72, network off). As before, dynamics and rhythmic behaviour were most presentable in the Naim idiom, and rather better than much of the competition, while the timbre was sweet and natural.

In addition, opinion was sometimes divided as to whether the USB HDD drive replay of a particular CD track *via* the *UnitiServe* might be slightly better than with its internal drive, perhaps because the latter was not working significantly in this condition. However, the differences were small. As we had found before, Naim's *DAC* had respectable detail and depth, sounded upbeat, interesting and well focused, yet did not draw attention to itself. High treble was sweet and clear, the bass went deep and was well defined, and the whole remained easy on the ears.

Reaching for a higher standard we were looking to see if we could wring more drama, sharper focus, and a greater degree of transparency, with depth extending further into the soundstage.

We added the *XPS* to the *n-DAC* (located on a second shelf, the approved installation technique), and found the upgrade was far from trivial (as Malcolm Steward found in his original review). Once again the combination ranks high in its price sector with a classy 85 marks (16-bit/44.1kHz). It set high standards for dynamics, dynamic expression, bass line tune playing and timing, and rhythmic vitality. The *n-DAC* sounded distinctly 'analogue' on better quality recordings. It was fluid, with low grain, very good resolution, and very low coloration or 'signature'. A stream of 'near excellent' ratings were awarded for depth, focus, stage width and detail.

We had commented that the 'super low jitter' master clock and the heavily buffered, protected audio data used in this DAC should in theory have totally suppressed transport and other digital audio source differences, never mind the type of co-ax cable used. But it did not. Fed from the *UnitiServe*, it was worth using a relatively short BNC-terminated cable. (Incidentally, I suspect that the direct USB input of our 2011 production *n-DAC* has been improved, since good sounds were now obtained that were very close to the S/PDIF input.) Some users might consider loading their hi-res material in doses onto USB sticks and playing them directly, even if there is no readout other than track selection.

Once the system was nicely tuned, we turned to hi-res material and made like for like comparisons, *ie* working as a single-ended source feeding the Audio Research pre-amp. Now this Naim system showed its mettle, with a winning combination of audiophile soundstage width, depth and focus, with high levels of detail and transparency, and firmly expressed dynamics and pace. With *n-Serve* working smoothly on the *iPad* we could relax and explore the stored music library, sampling track after track and then settling down to enjoy an album. Hi-res material was scoring a class leading 103 points *via* pre-amp connection.

To stretch the limits for the *UnitiServe* we also connected an MSB *Platinum IV* DAC, this running on its top spec *Diamond* supply. This combination justifies treatment elsewhere, but showed that the *UnitiServe* is certainly capable of operating in the high end when required. On hi-res material the pre-amp included results were very close to the direct-coupled (no pre-amp) Linn *Akurate DS* result, so we consider that Naim's *UnitiServe* S/PDIF feed can operate close to the highest level, as required.

Late in the review a set of MSB *Platinum Diamond* series DACs and supplies (costing some £25,000!) arrived. *UnitiServe* was not disgraced. Its home network controlled hi-res S/PDIF audio signals were nicely portrayed by the MSBs with their known, inherent, nuanced high performance, and this proved an eminently useable combination. Here, unreservedly, was audiophile quality hi-res audio reproduction, which was also dynamic and rhythmically well paced.

Conclusions

Straight out of the box, the sound quality from this two-unit replay combination was exemplary at its price level, and close to Naim's still excellent *CDS3*. The latter is a little better of course, but adding the *XPS* power supply upgrade with an optimum transport takes this *n-DAC*'s sound quality somewhat above the basic *CDS3/XPS*, though not on every point. Good value for money, it's effectively a 'universal window', rendering data in almost all formats and data rates to an S/PDIF digital signal. Our previous review confirmed the compatible *n-DAC*'s very fine lab performance, with neutral responses, fine input/output matching and high resolution.

The journey may seem wayward, dealer support is strongly recommended, but this project shows that the *UnitiServe* concept does work well, both as a high capacity drive, a server and a streamer capable of full hi-fi performance *via* S/PDIF, for example with our featured Naim *n-DAC*, or some even more ambitious alternatives, with both Naim and other audiophile quality components. And did I forget to explain that the *UnitiServe*'s internet radio is now programmed with a *Naim's Choice* selection of superior quality stations, and that this tidy little unit can also simultaneously deliver six independent normal definition selected audio feeds to varied home network linked locations around a dwelling?

Internet Radio and Naim's Choice

Internet radio is fast coming of age. At its best, which means when running at 320kb/s with AAC encoding, it's comfortably superior to DAB and the digital transmissions delivered on the various TV platforms, and may now be regarded as serious competition for FM broadcasts, especially where the latter suffer from compromised reception conditions.

The trouble is, amongst the estimated 17,000 stations available, the vast majority stream their services at rubbish quality. While *UnitiServe*'s *iRadio* feature allows users to choose the stations they wish to store on the available pre-sets, Naim is now adding a *Naim's Choice* menu option to make finding the good stuff much easier. This will be pre-programmed with what Naim considers to be the pick of the internet bunch. These include an exclusive 320kb/s AAC arrangement with US-based Radio Paradise, Dutch classical operation AVRO Klassiek (320kb/s MP3), plus the AAC encoded 320kb/s BBC Radio 3 and 128kb/s Radio 4 in the UK. The plan is to add to *Naim's Choice* as more high quality stations are found, and take in suggestions posted by readers on the Naim Forum.

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