Network-enabled media storage device
Made by: Buffalo Technology, Japan
Supplied by: Kog Audio Ltd, UK
Telephone: 024 7722 0650
Web: www.melco-audio.com; www.kogaudio.com
Price: £7700

AUDIO FILE

Melco N1ZS20/2

With huge IT/computing resources on tap courtesy of Buffalo Technology, Melco has established itself as the audiophile's go-to music library. Now there's a mk2 series...
Review: **Andrew Everard** Lab: **Paul Miller**

When I first reviewed some products from the Melco Music Library range, I received an email from an acquaintance that threw me for a while: 'Yes,' he said, 'but what's it actually for?' He went on to question the whole idea of a hi-fi network server, arguing that the quality of what was essentially a glorified NAS unit could have no effect on the sound, and moreover that 'bits is bits, digits is digits', and so on. We never strayed on to the subject of different network cables having an impact on sound...

SHIFT OF EMPHASIS

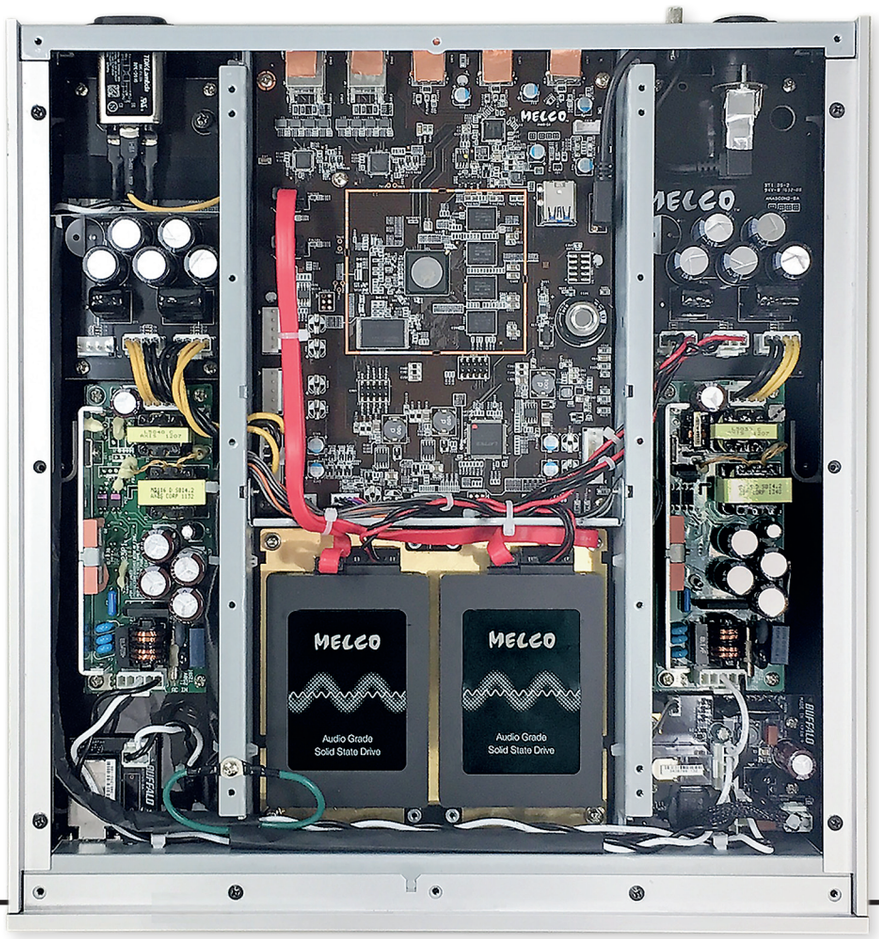
Nevertheless, the lab tests conducted by editor PM on the first-gen Melcos were also more conclusive using the Libraries as USB rather than network audio sources [*HFN* Feb '15, Aug '15 and Jun '16]. So with the arrival of its second-generation devices, which start at £2099 and go up to the £7700 N1ZS20/2 model reviewed here, Melco has not only paid attention to further improving the main planks of its offering, but has also reinvented its products with a subtle shift of emphasis.

There are two main approaches to this whole 'computer audio' thing: network playback, using a streaming player to pull data over the home network from a storage 'tank'; and the so-called 'Macs and DACs' way, in which a computer is used to play the music (and sometimes store it, too) and connects to the hi-fi system using a DAC via USB. Of late we've products appearing to span both methodologies, as some DACs have built-in networking – usually controlled via a smartphone/tablet app – just as there are dedicated 'bridge' devices designed to sit 'twixt network and DAC [see the dCS Network Bridge, p66].

Melco has also moved with this trend. Initially, its products were all about optimised network audio, with a dedicated, isolated Ethernet output to feed a network player, and storage designed for the needs of music playback. Now the latest Melco models include a dedicated USB 2.0 DAC output, aided by a CD player-like interface on the simple OLED display.

At the entry level to the new range, the N1AH60/2 offers 6TB of internal storage, along with a power supply design based on that of the flagship model here. The midrange model, the £4299 N1ZH60/2, uses two small form factor (SFF) HDDs to yield its 6TB capacity, and also incorporates the vibration damping strategies of the N1Z20/2. As the model designation suggests, the N1Z20/2 itself has a smaller storage capacity: it's just 2TB, but achieved using a pair of 1TB second-generation Audio Grade SSDs, designed by Buffalo's memory division to address what the company feels are the limitations of conventional solid-state drives, which it says can have audible effects.

These 'audio grade' drives differ by removing some strategies usually present on IT SSDs: wear levelling, which is designed to manage read/write hotspots by shunting data around, but isn't needed in the write once/read many audio environment; acceleration, which is there to hit industry benchmarks, but which pushes the flash memory, thus creating more power supply noise; and



RIGHT: The N1ZS20/2 hosts a pair of custom 1TB Buffalo-built solid-state drives, supported on compliant mounts. Twin switchmode PSUs feed its LAN and USB-equipped Marvell/Lattice microprocessor-based server mainboard

ABOVE: OLED panel and up/down/enter/back buttons allow the Melco to be configured and content to be navigated. Information about attached USB/network devices is also revealed

compression, used to boost apparent capacity and cover damaged elements via redundancy – again this is not needed in audio applications.

QUALITY VERSUS CAPACITY

In addition, the drives use higher-grade flash memory and are produced in very low volumes, this accounting for their relatively high price, Melco saying that the audible benefits are clear. The drives are mounted on a hefty non-magnetic anti-vibration platform, and are electrically isolated via a separate PSU that even includes audiophile grade film capacitors just for the solid-state drives.

Like all the new models, the N1Z20/2 runs in RAID0 configuration, opening up all the capacity of the drives for music storage but requiring that a backup strategy should be in place. If the 2TB capacity is insufficient, there are hints that a dedicated expansion unit is on the way in the near future, along with word of a disc-ripping unit on the stocks – the Melcos having no built-in optical disc capability.

The new Neutrik USB 2.0 port is purely for connection to an external DAC, offering native handling of DSD files all the way up to Quad DSD (DSD256), as well as DoP, and software redesigned to optimise the use of the units as player/transports as well as servers. Playback is now possible via the front panel controls as well as using app control, and while playing from the internal hard drives, the Melco Music Libraries can also play back from attached USB drives or even a USB optical drive for discs, in addition to copying/ripping from them to the onboard storage. It is, of course, also possible to copy content to the N1Z20/2 directly from a computer, or indeed other stores, connected on the same network.

> 'It brought better slam and drive to Jamiroquai's "Dr Buzz"'

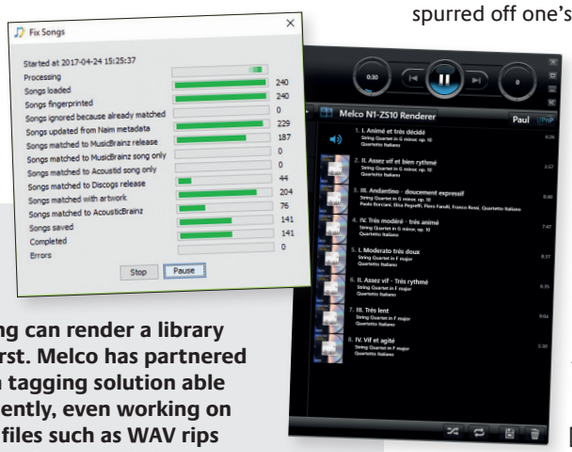
Otherwise the MkII version is similar in its connectivity to past Melco Music Libraries: USB 3.0 ports are provided for playback from devices, expansion and backup, and the usual dedicated Ethernet port for connection to a player as well as a loop through for one's existing network (for control and data). New integrated software technologies include SongKong, which can re-tag and organise a music library stored on the units, and Ravenna, the pro-derived networking protocol also used by the Merging+NADAC [*HFN* Nov '16]. There's more on SongKong in the boxout panel [below], but for now the Ravenna implementation – though undoubtedly showing promise – is really of passing interest, supported as it is only by the Swiss Merging Technology products in the consumer audio arena.

A STRIKING CONCLUSION

I used the N1ZS20/2 in a variety of configurations, both as a network music server and as a digital transport, and in the former mode found things much as I have in the past. Specifically, provided some efforts are made to optimise network connectivity, using a separate switch spurred off one's main router between it and your player, a standard NAS unit may well give results that are near-indistinguishable from the N1ZS20/2 in such a configuration.

However, where it starts to get interesting is when the N1ZS20/2 is used as a transport for a variety of DACs, ranging from the very affordable AudioQuest DragonFly Red [*HFN* Oct '16] through the likes of the Chord Mojo [*HFN* Jan '16] and the Korg DS-DAC-10R all the way up to the superb Marantz SA-10 player [*HFN* Mar '17], used here as a DAC via its USB Type B input.

And what was even more surprising was that the simpler the DAC, the more impressive was the effect of introducing the Melco 'transport' into the chain, ⟶



SONGKONG – KING OF APPS?

Metadata is both the friend of computer audio systems – letting them find content by artist, title, album and so on – and also their worst enemy: incorrect or absent tagging can render a library confusing at best, and all but unusable at worst. Melco has partnered with SongKong developers JThink to deliver a tagging solution able to recognise, look up and retag music consistently, even working on files with no tags, or those with separate tag files such as WAV rips made by Naim units. The SongKong for Melco software, which costs £40 for Melco owners, a 20% discount, allows an entire library to be retagged using a connected computer, with particular benefits for those whose collection goes beyond the usual artist/song/album norm, such as jazz and classical music enthusiasts. What's more, it allows a high degree of user-customisation to suit specific needs, and will present information in the same format across a library when used in conjunction with the excellent MinimServer software.

ABOVE: No analogue outs as Melco offers network and direct player Ethernet connections, plus a dedicated Neutrik USB 2.0 DAC port for its 'Local USB/DAC Player'

with the 'bus-powered' DACs (that's to say, those that derive their power from the device to which they're connected, rather than having their own power supplies) showing the greatest improvement.

Perhaps that shouldn't be a surprise, given the work that's gone on within the Marantz SA-10 in particular to optimise the incoming signal before it is handled by the DSD-based conversion on its way to the analogue outputs. But the effect with the inexpensive DACs used during the listening, ranging from not much more than £100 up to just on £500 was certainly striking.

In fact, so much difference did it make with the already excellent AudioQuest 'stick' DAC that I spent quite a bit of my listening time on this unlikely pairing. Of course, drawing comparisons between a £200 secondhand Mac mini and a dedicated £7700 music transport might seem somewhere around about 12 on the usual 1-10 obviousness scale, but the fact is that the N1ZS20/2 really makes this unassuming little DAC sing – and also pulls off the same trick with the very excellent Korg DAC.

CLEARER FOCUS

Playing a wide variety of music, the main impression is of clarity and focus being greatly improved, allowing the detail of instrumental timbres in particular to be enjoyed. And that's not just the case with a meticulous solo piano recording such as Sunwook Kim's excellent recent set of Beethoven piano sonatas [Accentus ACC30409], for it also brings better slam and drive to Jamiroquai's 'Dr Buzz' from *Automaton* [Virgin EMI CDV 3178], with the deep, deep bassline especially impressive in its room-shaking ability.

It's hard to label the N1ZS20/2 with a sound of its own. Rather, it simply seems to allow a connected DAC to give more of itself, as is clear when using the Korg to play Trichotomy's 'Asset Or Liability' from *Known-Unknown* [Challenge Records CR73439]. The trio just sounds tighter, more of a piece and it's easier to listen-in to the contribution of each of the musicians as one would when hearing a live gig, not least due to the greater sense of them being placed before you.

It's a trick the N1ZS20/2 pulls off time after time, even with the slightly rough and ready live recording of Keith Emerson duetting with Oscar Peterson and his big band on 'Honky Tonk Train Blues', from *Emerson Plays Emerson* [EMI 7243 5 57301 2 1], where the drive and pace of the music is enhanced (and the limitations of the recording revealed!). It may not be demonstration quality, but it's certainly enjoyable.

This focus and crispness of sound also suits complex orchestral music well, allowing the fugue from Walton's 'Spitfire Prelude And Fugue' [ASMF/Marriner; Chandos CHAN 8870], magnificent space and openness to develop, from the skittering strings to the glorious edge to the brass. But then that's what the N1ZS20/2 is all about – giving the DAC you choose to use room to do its stuff.

HI-FI NEWS VERDICT

It's always tricky to ascribe a sound quality score to a device such as this, but the N1ZS20/2 simply seems to bring out the best in DACs at a range of prices, and is especially impressive when used with modest digital converters. True, it's not exactly cheap, and for some the storage space will be limited – though there are expansion plans in hand – but it's a fascinating alternative to a conventional network player.

Sound Quality: 86%

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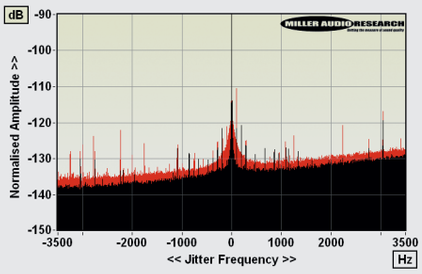
LAB REPORT

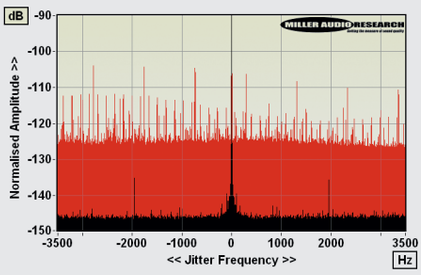
MELCO N1ZS20/2

Because the Melco N1ZS20/2, just like the first generation N1ZS10 [*HFN* Feb '15], N1AH40 [*HFN* Aug '15] and N1ZH60 [*HFN* Jun '16], is a data storage and delivery device then any technical or subjective uplift in performance – over a conventional NAS or PC/Mac USB solution – can only be inferred via an attached, third-party streaming player or DAC. Identifying any reduction in jitter or circulating RF interference from the N1ZS20/2 also depends on the efficacy of the USB sink's jitter suppression and/or galvanic isolation, so a USB DAC with excellent data recovery/reclocking may not express a significant difference. Similarly, a DAC that incurs significant jitter under its own bonnet will suffer the same distortion sidebands in the analogue domain regardless of the coherence of the digital data at its input.

Ironically, it is the more rudimentary USB hub-powered DAC/headphone amplifier solutions – as opposed to high-end USB DACs with integral power supplies, *etc* – that provide us with the best indicator of incoming data integrity and noise (or lack of) on the +5V supply. Driven directly from the N1ZS20/2's USB (Neutrik) player output, a DAC with good jitter suppression – the iFi Audio micro iDSD Black Label – showed a marginal improvement from 140psec to 105psec [see Graph 1, below] but a significant 88.9dB to 94.6dB gain in A-wtd S/N ratio. Another battery-powered DAC, Oppo's HA-2SE [*HFN* Dec '16], enjoyed an uplift in A-wtd S/N ratio from 95.5dB to 100.1dB while jitter fell from 460psec to 115psec. However, as we also witnessed with the N1ZH60, the biggest improvement was realised by Chord's Mojo [*HFN* Jan '16] where its S/N improved from an already fine 104dB to a spectacular 113.5dB along with a near-elimination of any residual jitter from 85psec down to <5psec [see Graph 2, below]. **PM**



ABOVE: 48kHz/24-bit jitter spectra from an iFi Audio iDSD DAC over USB (red, via standard PC) and direct (black, via Melco N1ZS20/2 USB player out)



ABOVE: 48kHz/24-bit jitter spectra from a battery-powered Chord Mojo over USB (red, via standard PC) and direct (black, via Melco N1ZS20/2 USB player)

HI-FI NEWS SPECIFICATIONS

LAN (1000BASE-T)	One via router, one direct to player
USB (USB Type A)	3x USB 3.0 and 'USB DAC' (USB 2.0)
Digital jitter (IFi Audio iDSD BL)	105psec (140psec via PC USB)
Digital jitter (Chord Mojo)	<5psec (85psec via PC USB)
Power consumption	14W
Dimensions (WHD) / **Weight**	350x75x370mm / 8.4kg