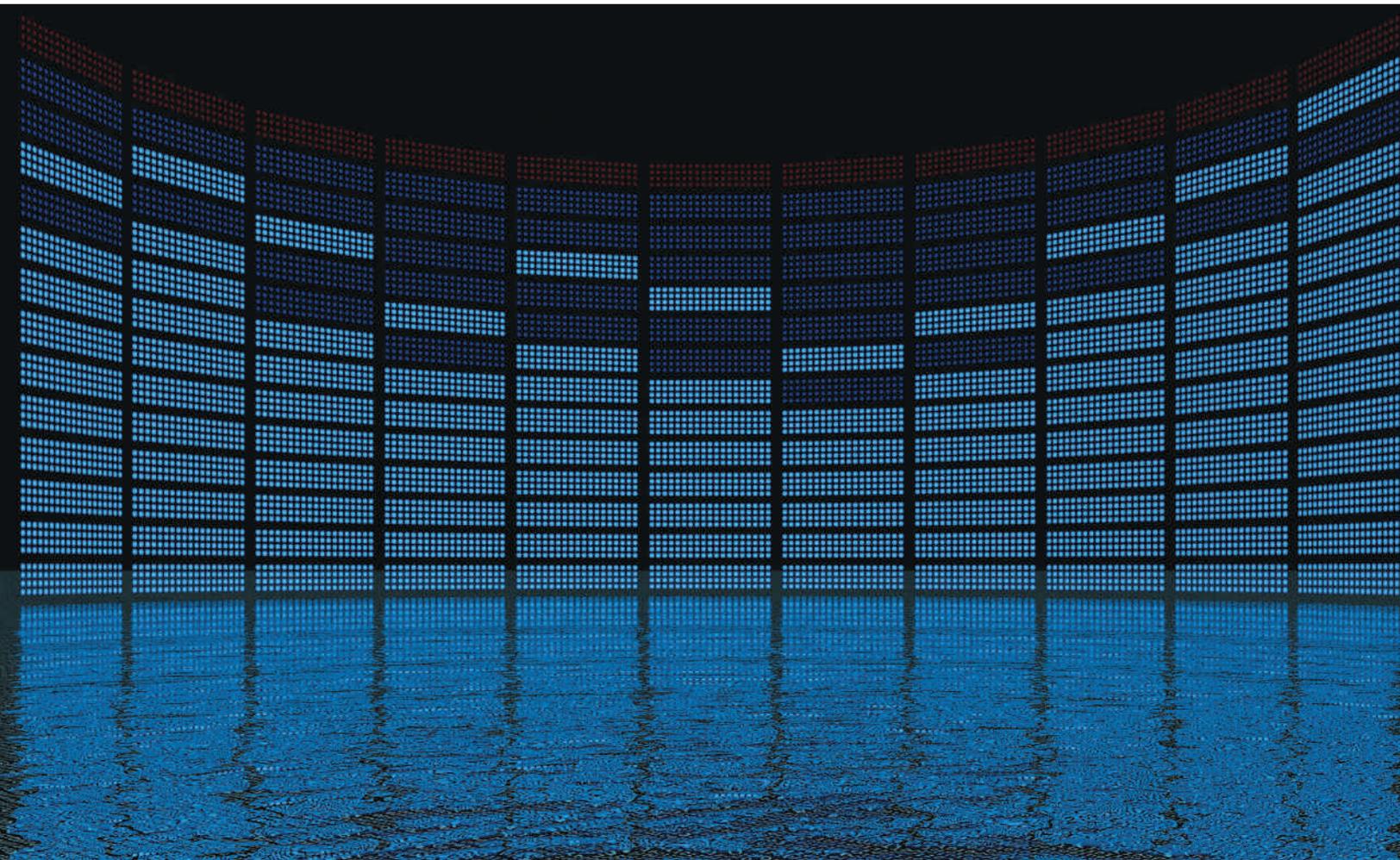




DEFINING THE FUTURE

by Greg Stidsen

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DEFINING THE FUTURE

NAD takes a leadership role in next generation 24/96 studio master music downloads

Serious music lovers have always sought out the most convenient and best sounding media for their music. The 78 RPM record was more convenient, longer lasting and better sounding than Edison's wax cylinder, and subsequently became the best way to listen to music at home. The Microgroove LP, by allowing a complete symphonic movement without flipping or changing the record became wildly popular in the 1960s. The fact that the surface of the vinyl record was quieter than the shellac surface of the 78, and that the speed was more stable was probably enough to guarantee acceptance. But even better for the

audiophile was a new standardized recording equalization approved by the RIAA that meant the LP could deliver what came to be known as FFRR (Full Frequency Response Recording) which spawned an entire industry of High Fidelity components (including the birth of NAD). Stereo recordings came next, a technological breakthrough that pushed the limits of LP technology. Also in this mix of analogue disc formats is the 45 which offered the convenience and low price of a single song purchase - this appealed strongly to the youth market and Top 40 hit culture of the time.

The **Compact Cassette Tape** came next, adding the convenience of longer playing times, carefree handling, and the ability to make custom play lists on your Cassette Recorder. These robust little cassettes also made them portable and allowed true high fidelity sound and personalized music to be enjoyed in cars and on that revolutionary device, the Sony

Walkman. Now with a battery-powered Walkman and headphones, music could be enjoyed anywhere anytime, and instead of having to share a radio station with everyone around you, you could enter your own private musical paradise.

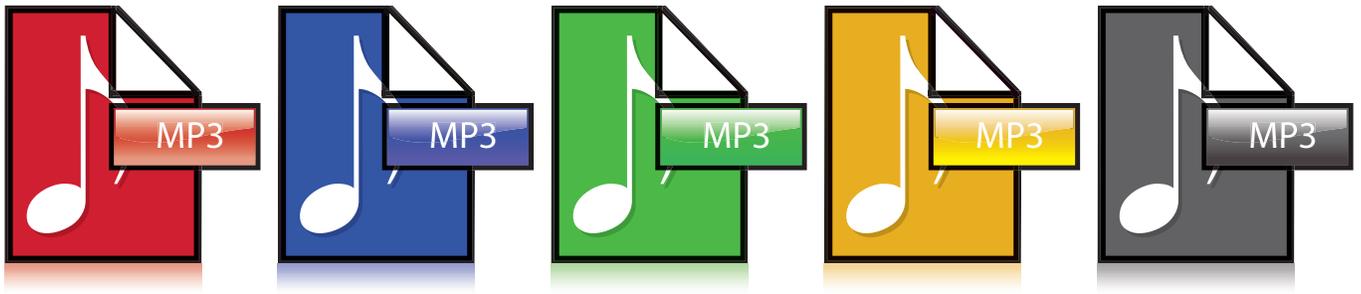




The next revolution in sound was the Compact Disc with Digital Encoding and 'perfect sound forever', with the additional convenience features of instant access to songs and no rewinding. The almost total lack of noise when compared with LP and Cassette could be heard and appreciated by everyone. But the fidelity seemed to take a step backward from a well-engineered LP, and many music lovers and audiophiles still regard the LP as the pinnacle of recorded sound.

Still, the CD shared all of the convenience factors enjoyed by cassette along with additional convenience, durability, and the complete elimination of noise. As digital recording techniques in the studio improved, so did the sound of the CD. New higher resolution versions of the optical disc, SACD and DVD-A, came along but never gained the popular acceptance of the basic CD, although they demonstrated just how good a digital recording can sound and were applauded by audiophiles, their sales and marketing were ignored by the industry. It was clear that many record companies did not want to release to the public what was nearly an exact copy of the Studio Master Recording.





The next recorded music revolution was spawned by the file sharing convenience of the internet. While the internet has changed just about everything concerned with information distribution, its effect on the music industry was both devastating and transformative. Suddenly with Napster, music could be shared and delivered with the click of the computer mouse. The fact that you didn't need a disc or tape and could store music on a small memory chip fulfilled a vision shared by many music lovers and futurists just a

few decades ago. This was all made possible by the small file size afforded by 'lossy' compression schemes like MP3. While it is amazing that MP3 can eliminate 90% of the music and still maintain a semblance of fidelity, critical music listeners have noted a certain lifeless hollow quality to MP3 processed recordings that seems a step backward from even CD, let alone LP.

MASTERS DIGITAL



M2 Direct Digital Amplifier





Now, at last, there is a new medium that combines the instant access afforded by the internet, with the ultra-high resolution of the Studio Master Recording. While 'lossy' compression will remain

the mainstay of the mobile music industry for the foreseeable future, home-based music systems can use the wide bandwidth of the home network to purchase and download Studio Master 24/96 recordings.

MUSIC SUITE



M50 Digital Music Player



M52 Digital Music Vault



M51 Direct Digital DAC



What is the significance of 24/96?

It is all about resolution, and just like digital cameras, the more pixels (or bits in audio parlance) the smoother and more detailed the picture. 24 bits has so much processing power it can still show details 144dB below the maximum recorded level, more dynamic range than our ears can safely handle. 96 refers to the 'sampling rate' in kilohertz, and means that every second, the musical waveform is calculated 96 times. While CD's 44.1kHz sampling rate is fully adequate to capture a 20kHz frequency, the audio filters required to remove the sampling frequency (a necessary process) can affect the audible spectrum.

The great news is that 24/96 downloads are of Studio Master Quality, and often employ 'lossless' compression for a bit-for-bit perfect transfer while cutting download times in half. Compared to 24/96 downloads, CD has far lower resolution at only 16/44. MP3 is worse

yet, starting with CD's 16/44 resolution and then discarding 90% of the information – think 6 mega-pixel camera (CD) compared to 2 mega-pixel camera (MP3). 24/96 is like a 12 mega-pixel camera!

Almost all currently available hardware and software solutions for downloaded music are aimed at the MP3 crowd. There is a great opportunity for music lovers and audiophiles alike to enjoy a major increase in both convenience and sound quality by purchasing music as 24/96 downloads. Up until recently, the problem has been access. You needed a patched together system of PC bits and Hi-Fi parts and a lot of persistence and creativity to find such elusive 24/96 lossless downloads in cyberspace. The market for 24/96 downloads is very rich, yet still fragmented.

Software Defined

The M50 Digital Music Player ushers in a new era of 'software defined' audio products. This unique open-ended architecture allows for a roadmap of future improvements and upgrades and opens the door for adding Internet-based music services.



MASTERS DIGITAL MUSIC SUITE



The **M2 Direct Digital Amplifier** is the beginning of the future. This state-of-the-art device with 35-bit resolution is the perfect bridge to the 24/96 world. With a full 120dB dynamic range, the M2 is uniquely positioned to redefine high-end audio.



The **M50 Digital Music Player** is a 'computer-free' access point to the world of 24/96 downloads. The M50 integrates perfectly with all your existing Hi-Fi separates. Supporting HDMI, USB, Ethernet and Wi-Fi Network, in addition to PCM audio optical disc (CD/DVD), the M50 is the hub for digital music in your system seamlessly integrating legacy digital with future digital.



The **M52 Digital Music Vault** is a memory bank using magnetic disc (Hard Disc Drive) technology. Utilizing special low RPM media drives, with 3 Terabytes of capacity, the M52 is not only virtually silent in operation, but it is also reliable and cost effective. Utilizing Enterprise Class RAID (Redundant Access Independent Disc) technology, the M52 is the safest way to store your precious recordings, automatically managing 'data backups' of your music collection. Even if a Disc Drive fails, music will never be lost, and the replacement drive will automatically reconfigure!



The **M51 Direct Digital DAC** is a 35/844 DAC that supports USB (24/192 capable), HDMI with video pass-through, in addition to the various SPDIF variants. This is the world's first implementation of NAD's revolutionary Direct Digital technology in a digital-to-analogue converter. Multiple power supplies, high precision audio-grade passive components, and NAD's renowned Masters Class A circuitry drive are both balanced and single-ended analogue outputs. With multiple digital inputs, a 'perfect DSP volume control', and choice of balanced or single-ended outputs, the M51 Direct Digital DAC can transform an existing analogue audio system by replacing the traditional preamp.

Additional NAD 24/96 Products



The **C 390DD Direct Digital Amplifier** features the same revolutionary digital amplification technology as the M2 in a smaller less powerful (but more affordable!) package. The C 390DD features a 24/96 'asynchronous' USB input and MDC options for HDMI that supports audio resolutions to 24/192.



MDC Modular Design Construction

The **MDC DAC** is an optional accessory for the NAD C 375BEE and C 356BEE Integrated Amplifiers. Offering both a 24/96 'asynchronous' USB input and a coax SPDIF input feeding a 24/192 DAC to interface with the classic NAD PowerDrive analogue amplifier technology.



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