JASON VICTOR SERINUS

Antipodes Audio K50

MUSIC SERVER

On the face of it, playing and streaming digital music files is a straightforward process. You direct data from various sources—some local, some "in the cloud"—perhaps via a reclocker/signal conditioner to a digital-to-analog converter (DAC). "And the music comes out here."

Not so simple. Bits, it seems, aren't bits, or not only. A digital datastream is also an analog signal. Noise and other signal errors endemic to multifunction computers not designed primarily for music playback can affect how music sounds. And then there are the practical issues of setting up and connecting everything optimally, and then organizing music files correctly, which can be especially difficult when ripping files from multidisc sets.

Colors were full and inviting, and transparency was excellent.

These obstacles are why so many audiophiles have either switched to one-box music server solutions or even thrown up their hands and stuck with physical media.

Ever since I began using my Roon Nucleus+ music server, powered by an HDPlex 300 linear power supply rather than Roon's supplied switching power supply wall wart, I've wondered about the quality of other server/streamers that cost considerably more. I've listened to a few, including the Wolf Audio Systems Alpha 3 SX and the Innuos Statement. In June, I requested a review sample of my most expensive yet, the one-box, flagship server made by New Zealand company Antipodes Audio, the K50 ($15,000). My contacts at the company were Mark Jenkins, Antipodes's CEO, and Mark Cole, the company's head of service, sales and marketing. Which meant that, in addition to figuring out how to operate a unique device with multiple choices of inputs, outputs, servers, and players, I had to figure out which Mark was which.

Jenkins, who was raised on Bizet, Puccini, Gershwin,

SPECIFICATIONS

Description Dedicated audio server running Fedora Linux. Contains an Intel i7 processor with 16GB RAM, up to 24TB user-provided/installed SSD. Digital data inputs: Gigabit Ethernet (RJ45), two USB3-A for data discs, dual USB-A for external ripper, two servicing ports, BNC TTL 75 ohm for word clock. Digital audio out: Direct stream Ethernet (RJ45) to streamer; USB 2.0 outputs PCM to 32/768, DoP to DSD512, Native DSD to DSD512; S/PDIF (RCA and BNC) outputs PCM to 24/192, DoP to DSD64; AES3 outputs PCM to 24/192, DoP to DSD64; I²S HDMI and I2S RJ45 outputs PCM to 32/384, DoP to DSD256, Native to DSD512. Formats supported: WAV, AIFF, FLAC, ALAC, AAC, M4A, MP3, OGG, DSF, DFF, DXD, MQA.
Dimensions 17.5" (445mm) W × 4.7" (120mm) H × 14.5" (370mm) D. Weight: 42lb (19kg).
Finish Black.
Serial number of unit reviewed K50B0502. Made in New Zealand.
Price $15,000. Approximate number of North American dealers: 12. Warranty: 2 years, 3 years with product registration.
Manufacturer Antipodes Audio Limited, Suite 1, 2 Ake Ake Place, Otaki 5512, New Zealand. Tel: (303) 495-2260 x116. Web: antipodes.audio.

Rimsky-Korsakov, Borodin, and the Rolling Stones, spent several decades in the digital transmission, broadcasting, and telecommunications fields before he entered the hi-fi industry in 2004. He focused on cables at first and then turned to music servers.

"I was struck with a conundrum back in the '90s," Jenkins explained in an email; we also communicated extensively in WhatsApp. "Using computer audio opened up my library of music to me in a way that playing a record or a CD did not. Yet the record and CD sounded better. … This was despite me using a couple of different reclockers and some high-end DACs that claimed to fix jitter completely [and] render the limitations of the source irrelevant. … So I decided that the simple explanation that 'data is just data' needed to be examined."

Experimentation led Jenkins to the belief that every component in a stereo system matters. "For computer audio, the idea that you can do a bad job at the source and fix it later is simply out of line with what I hear. … Many of our competitors focus on either a low-cost or a high-power computer to crunch numbers; then they rely on things like slow linear power supplies and add-on devices designed to filter noise or regenerate the signal to fix things after the event. … [Antipodes] starts with audio design from the ground up.

"As explained on our technology page,[1] we believe the industry has focused too heavily on noise and adopted noise reduction techniques that compromise bandwidth." Instead, Antipodes aims to ensure a high-quality digital signal from the outset and to preserve bandwidth. "We believe this sets the sound of our music servers well apart from those of our competitors.

"The problems of early digital have been leading people in the wrong direction. In the beginning, we were largely trying to get rid of the harshness and nasty top-end noise that came about through (a) using hard drives and (b) interference with the audio signal. A lot of the way that people dealt with that noise was to slow everything down with slow linear power supplies, noise filters, and regeneration, which tends to act like a filter as well. The fundamental difference between our approach and what we see most of our competitors doing is that we approach everything from the ground up rather than applying Band-Aids after the event. I think we are also unique in our focus on bandwidth as well as noise rather than focusing exclusively on noise.

"Our goal is to provide a perfect squarewave to the DAC, … [one that] is able to turn around a corner at a perfect right angle and doesn't have wiggles and squiggles that confuse timing. … We started to work on improving bandwidth rather than reducing noise [because] if we improved bandwidth, then life, verve, vigor and emotional involvement—the stuff that makes you smile, cry, or dance—came through. … If we allowed noise at the beginning of the signal, we would have to start filtering and slowing things down to get rid of the problem." Instead of "starting with rubbish, we design from the ground up to minimize noise. Because of that, we can also maximize bandwidth."

In one of numerous follow-up chats with the two Marks, Jenkins noted that worldwide chip shortages had forced a few changes to the K50's design and that the beta software I'd be receiving wouldn't be bug-free.[2] Nor was an updated manual available. What was consistent with the previous iteration of K50s, however, was that it honors Jenkins's "personal bias that timbre must be accurate" for music to have life.

"The ultimate goal of Antipodes Audio is to deliver the emotional fulfilment that can be hard to achieve in the course of an ordinary day," he said. "Every now and then, I listen to a distributor's $130,000 turntable setup and ask myself, 'What are we missing?' The great turntables have a kind of life and verve to them that the music servers of a few years ago just didn't get. Getting that life and verve into an Antipodes music server has been my biggest goal over the last few years. … It's easy to get a music server to throw loads of detail at you; getting it to make musical sense is the hard part."

Every experience was revelatory.

Antipodes optimizes the K50's power supplies to increase speed and lower noise. The company works with two manufacturers of industrial motherboards to ensure optimal tuning for precision and noise performance. "Tuning is really only available to a motherboard manufacturer," Jenkins said. "With their help, we can optimize audio performance. This gets us high-quality, great-sounding motherboards, albeit at a relatively high cost compared to using standard motherboards.

"Your reference Roon Nucleus+ is not quite the same thing as the K50. The Nucleus is there to play the Roon server app; the K50 plays a range of server apps on one internal device and the selected player app on a second, isolated internal device. It also generates a full range of digital outputs using oven-controlled clocks.

"The K50 has three computational parts, each fed by a dedicated, overspecified, superfast low-noise power supply:

- The server computer runs the server apps, manages storage, manages internet streams. … In simple terms, it provides high-quality streaming of files over Ethernet to the player computer.
- The player computer runs the player apps, outputting via USB, and feeds the [other] digital outputs. In simple terms, it receives the files streamed from the server computer and

1 See antipodes.audio/antipodes-technology.php.

2 This was an understatement.

turns them into digital audio signals.

The digital outputs unit is run by an FPGA computing engine and does a few things including providing galvanic isolation from the other computers, reclocking the digital signals by means of an ultrahigh-quality, oven-controlled clock, and generating signals in appropriate formats for each digital output. It is worth noting that the conventional digital outputs (S/PDIF, AES3, I²S) need to be generated using a high-quality clock. This is less important for USB and much less important for Ethernet, where issues like noise and bandwidth assume greater importance."

The K50 can work with Roon as server and player, Roon as server with Squeezelite or HQ Player as player, or Squeeze as server and Squeezelite as player.[3] Jenkins refused to advocate one or the other in print, although he did acknowledge preferences. After strongly encouraging me to try everything I could, he said, "If you're used to Roon, that's a good place to start. But [every server/player] combination sounds different, and preferences can change as the different software changes.

"It takes a K50 about 2 months to burn in properly," he told me. "It sounds too thin and sharp for the first 200 hours. If you turn it off for any length of time, it will take about 3 days to get back to optimum performance."

Ranking outputs in order of sound quality, Jenkins greatly prefers the K50's I²S, AES3 (aka AES/EBU), and S/PDIF digital outputs to USB. "You really don't want to use USB," he said. "I could bore you with why the sound quality of USB has been negatively impacted by the evolution of the USB standard, but I won't." What did *not* bore me was the prospect of comparing the various servers, players, and outputs. Evaluating outputs proved challenging because my reference dCS Rossini doesn't accept I²S, software bugs prevented me from easily switching between outputs (at first), the K50 occasionally reported the wrong file resolution, and on single AES3 and S/PDIF, dCS counsels not to exceed 24/192 PCM or DSD64. Only USB allowed me to play the highest-resolution files in my test arsenal. Given the need to evaluate several sources, outputs, and combinations of players and servers on a unit that would continue to settle in during the review period,[4] I had my work cut out for me.

Jenkins told me that while I could access the 8 or 9TB contents of my NAS with either Roon or Squeeze, the K50 sounds best playing from an SSD. Customers can slide up to three SSDs into the back of the unit, totaling up to 24TB. My review sample included a 1TB slide-in SSD; I had loads of fun watching Mark Cole transfer files to it from half a world away.

Setup

Jenkins gave the okay to using a nonlimiting power conditioner such as my AudioQuest Niagara 7000 and 5000, as long as I avoided putting server and DAC on different isolation transformers, which might cause an earth potential difference and damage the DAC. I was careful. On the 7000, the K50 joined the Rossini DAC, Clock, and Transport on a single transformer block; both the D'Agostino Momentum HD preamp and the LPS powering my EtherREGEN went on the other, and the D'Agostino Progression monoblocks occupied two high-current outlets. The Marks also approved the use of equipment supports, so Nordost SortKones were called into play.

I listened to files on my NAS (accessed via Ethernet), the same files on the slide-in SSD, and streams from Tidal and Qobuz sourced, again, through Ethernet. Outputs included AES3, USB, and (very briefly) Ethernet. Noting that single AES3 cannot reliably transmit files >24/192 PCM or DSD higher than DSD64, I stuck with files that could be played with every combination and permutation available for testing.[5]

I won't bore you with a description of the unit's front and rear panels; anyone who is interested in buying a music

server can access antipodes.audio for far more information than this review can hold. It suffices to say that the learning curve was steep and the time limited; the bugs and quirks of beta software, combined with the lack of a manual (which will probably be remedied by publication time), were a challenge. But in the end …

It's all about the music

Well, almost. To arrive at the point where I could simply sit back, close my eyes, let out a sigh, and bask in the blessings of glorious music reproduction, I first had to determine which combination of outputs, server, player, and source delivered the most satisfying sound. To summarize:

After comparing the latest builds[6] of Roon server, Roon player, Squeeze server, and Squeezelite player software on the most recent iteration of the Antipodes K50, the duo of Squeeze server/Squeezelite player, transmitted via single AES3 to the dCS Rossini DAC + Clock, delivered the most transparent, detailed, color-saturated, vivid, midrange- and bass-rich sound of all options available to me. In addition, files stored on the K50's optional SSD sounded a mite better—the extra transparency was noticeable—than the same files sourced from my NAS, Tidal, or Qobuz.

Alas, the Squeeze server/Squeezelite player are nowhere

3 Squeeze and Squeezelite are the native apps for the Logitech Media Server, aka Squeezebox.

4 For much of the review period, the K50 played files 24/7.

5 Jenkins wrote, "I should add that I am not a big fan of high-bitrate recordings or DSD. If you have harsh digital sound, then using higher bit rates and/or DSD will reduce that problem. But the trade-off is that you will lose midrange and upper bass presence. This is just a personal view, and nothing to do with any design choices we have made. Bigger bitrate numbers do not mean 'better.' High bitrates require longer filters, which makes the top-end smoother but shifts the problem down further into the audio spectrum. On top of this timing errors are magnified, transmission has to be accurate at even higher frequencies, and asking any computing device to operate at a higher speed means it operates at reduced precision. It is about managing the trade-offs in the best interest of the musical experience, like so many other considerations in audio."

6 As of July 5, 2021.

near as user-friendly as Roon. The Squeezes require separate searches through personal storage, Tidal, and Qobuz; I never succeeded in finding a search bar for the NAS and slotted-in SSD—which could mean that I'm blind or that we just failed to turn it on. File provenance, metadata, liner notes, commentary, album art, and other features are considerably more accessible and attractively displayed in Roon 1.8. And then there are the strange anomalies, eg, displaying the cover of French soprano Véronique Gens's new album while playing files for Caroline Shaw and Sō Percussion's recent Nonesuch release *Let the Soil Play Its Simple Part* when that cover was not in the Shaw folder.

But for sound alone, Squeeze and Squeezelite ruled on the K50. "Your system has never sounded better," proclaimed the husband during a rare visit to the music room to hear the final movement of Mahler's Symphony No.4, as remastered on *Classic Kathleen Battle: A Portrait* (16/44.1 WAV, Sony), sourced from my NAS and performed by Ms. Battle and the Vienna Philharmonic under Lorin Maazel. Three weeks earlier, he had heard the same music through my reference server.

On this delightful, heartwarming recording, images were larger and had more substance than usual. Bass was more solid and impactful, highs a mite more vivid. Colors were full and inviting, and transparency was excellent. From a recording notable for its wide soundstage, the K50/Squeeze combo projected a different sense of openness than I'm accustomed to, with more of the space between widely spaced instruments filled with the radiant sound of the instruments themselves. This is not a euphemistic way of suggesting that the soundstage was congested: It wasn't. Rather, the weave of the instrumental fabric was tighter. Figuratively speaking, I couldn't hold up the fabric to the sun and perceive as much light penetrating between the threads, because the fabric was so all-of-one-piece. Think 600 thread count sheets vs 200.

Shortly before I started writing this review, I used the Squeeze server and Squeezelite player to access files on the K50's slotted-in SSD of the "How Lovely Is Thy Dwelling Place" chorus from the classic analog stereo recording of Brahms's A *German Requiem*, performed by the Philharmonia Chorus and Orchestra under Otto Klemperer and remastered to digital by Warner (24/96 WAV). Colors and soundstage were wonderful, the music glorious.[7] Through my reference server, the soundstage was set farther back, with noticeably more air surrounding voices. With the K50, I moved a step closer to the stage (or vice versa), voices sounded bigger, colors were more intense, and a natural reverberation that increases with distance ceded to improved immediacy. This was no mere trade-off: Instead of dwelling upon what I had "lost," I reveled in what I had gained. How lovely is thy dwelling place indeed, especially when you can get closer to the front door.

I also revisited a recording that I reviewed in the September issue, Finnish composer Sebastian Fagerlund's *Nomade • Water Atlas* (24/96 WAV, BIS-2445), performed by cellist Nicolas Altstaedt and the Finnish Radio Symphony Orchestra under Hannu Lintu. Through the K50, the orchestra sounded fuller, warmer in the middle, and more dynamic and coherent than I recalled; it was noticeably more of one piece. Some of my scribbled comments: "Thrilling … what great stuff … really exciting … percussion excellent … great midrange … I think the additional color and weightier midrange, albeit subtle, significantly increase the music's impact."

From the sublime to Yello's "Electrified II" from *Toy* (24/48 WAV, Polydor 4782160): The K50 delivered some of the most solid electronically generated deep bass ever reproduced by the Wilson Alexia 2 loudspeakers in my room. I marveled at the extra depth and resonance in the voice of Swiss septuagenarian Dieter Meier. Equally revelatory was James Blake's self-produced "There's a Limit to Your Love" from *James Blake* (16/44.1 WAV, A&M 949999). For the first time ever, I heard the quality and pitch of those ridiculously strong electronic bass blasts shift midstream. How is it possible that I never heard that before?[8]

The server then set me off on an irony-laced journey, choosing tracks apparently at random, moving from Billie Eilish's "Listen Before I Go" (from *When We All Fall Asleep, Where Do We Go?*) to Joan Baez's "Babe, I'm Gonna Leave You" from *Joan Baez in Concert, Part 1*. Then came baritone Charles Panzéra's gorgeous 78-year-old recording of Fauré's "En Sourdine" ("Muted"), followed by Alexander Melnikov and Isabelle Faust's newer and distinctly *un*muted first movement of Mozart's Violin Sonata in D Major, K.506.

Blake's "Limit" put a halt to the journey. I was so amused by the bizarre sequence of files in my NAS's single-track

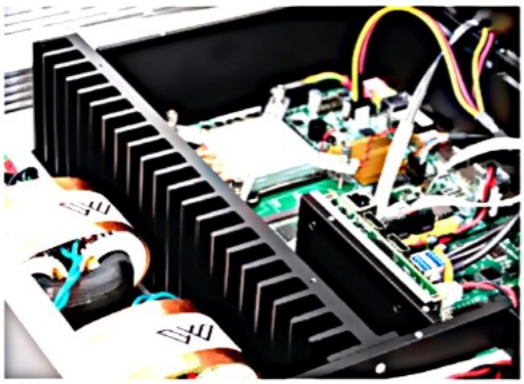
ASSOCIATED EQUIPMENT

Digital sources dCS Rossini DAC and Clock; Synology 5-bay 1019+ NAS; Roon Nucleus+ music server, Uptone Audio etherREGEN, Small Green Computer Sonore opticalModules (2) and Deluxe opticalModule, Linksys routers (2), and Arris modem, all powered by HDPlex 300 four-component linear power supplies (3); Apple 2017 iPad Pro and 2017 Macbook Pro laptop with 2.8 GHz Intel i7, SSD, 16GB RAM.
Preamplifier Dan D'Agostino Momentum HD.
Power amplifiers Dan D'Agostino Progression monoblocks.
Loudspeakers Wilson Audio Specialties Alexia 2.
Cables Digital: Nordost Odin 1, Odin 2, and Valhalla 2 (USB); Frey 2 (USB adapter); Wireworld Platinum Starlight Cat8 (Ethernet) and OM1 62.5/125 multimode duplex fiberoptic cables. Interconnect: Nordost Odin 2. Speaker: Nordost Odin 2. AC: Nordost Odin 2, AudioQuest Dragon, Dragon HC, and Thunderbird.
Accessories Grand Prix Monza 8-shelf double rack and amp stands, 1.5" Formula platform, Apex footers; Symposium Ultra Platform; Nordost QB8, QX4 (2), QK1, and QV2 AC power accessories, QKore 1, 3, and 6 with QKore Wires, Titanium and Bronze Sort Kones, Sort Lifts; AudioQuest Niagara 7000 and 5000 power conditioners; NRG Edison outlets; AudioQuest JitterBugs; Tweek Geek Dark Matter Stealth power conditioner with High Fidelity and Furutech options; Ansuz Darkz T²S resonance support feet; Wilson Audio Pedestals; Resolution Acoustics and Stillpoints Clouds (8) and Aperture 1 (2) and 2 (2) acoustic treatments; HRS DPX-14545 Damping Plates; Stein Music Blue Suns, Blue Diamonds, and Quantum Organizer; Bybee Room Neutralizers; Absolare Stabilians; Marigo Aida CD mat.
Room 20' L × 16' W × 9' H.—**Jason Victor Serinus**

7 I'm partial. I sang the tenor part in my high school chorus.
8 You don't have to answer that.

section. I didn't care about formats and resolutions. All that I thought about was how gorgeous everything sounded.

I've listened to Panzéra many times; the transition from the warm and gentle voice of the song's opening to the forceful voice of the song's middle section has never impacted me so deeply. If you want to know why Fauré dedicated his last song cycle, *L'horizon chimérique* (*The Imaginary Horizon*), to the 25-year-old Panzéra, listen to his artistry through the Antipodes K50.



Short of heavy metal and noise, I threw everything I could at the K50, from the maximally colored music of Henri Dutilleux to the recent remastering of *Sgt. Pepper's Lonely Hearts Club Band*. Every experience was revelatory.

Which means

With the optimal server and player software, the best output connections compatible with my DAC, and files sourced from optional user-added solid state drives that can store up to 24TB, the Antipodes K50 music server distinguished itself as the finest-sounding music server ever to grace my system. Image size and weight, color saturation, bass control, and transparency were the best my system has ever delivered. Listening was the most enjoyable and rewarding I've ever experienced at home. That is cause for celebration.

As I don my party hat, I can't pretend that the K50's best-sounding software and navigation options are particularly user-friendly. But the sonic rewards they deliver are profound. Our measurements can't reveal why one server sounds better than another; you'll have to take my word for it or listen for yourself.

I strongly suggest the latter approach: If a $15,000 music server is within your price range, or you want to hear all that a $15,000 server can deliver, audition the K50. Class A+ all the way. ■