SOUND IMAGE

Digital music, sorted.

Aurender A1000
music server & streamer

Aurender's A1000 is a server and a streamer which proves a bringer of music and joy, whether streaming Spotify from the internet or caching high-res files from its internal SSD drive-bay.

Aurender makes servers. Its first product, some 15 years ago, was a hard-drive-based server designed by the company's founder Harry Lee, an engineer and music enthusiast who was dissatisfied with existing music server options then available, which were largely computer-based, and didn't take the needs of audio delivery into account, he thought. So he built one that did.

Aurender's ongoing models added DACs and analogue outputs to the servers, and simultaneously developed the ability to stream from the new online music services, as well as from file storage within the home.

One key to their claimed musicality has been Aurender's buffering of music: the caching of files to internal memory before playback, or via RAM for streaming services, with the goals of reducing jitter, latency and mechanical noise, even able to cope with any temporary streaming glitches.

But equally crucial has been Aurender's complete control over both the hardware and the software engineering of its products. On the outside their products became increasingly strongly engineered in terms of industrial design, with big front displays, and laden with well-considered digital inputs and outputs. On the inside is software optimised entirely to take maximum advantage of the available hardware, while the user interacts (primarily) via the Aurender 'Conductor' app, which aims to bring together this potentially complex combination of streaming and serving under a simple and friendly interface.

Here at *Sound+Image* we've long been a little shy of consumer servers (in both the video and audio sectors) just because of the hard drives. Traditional HDDs can all too easily fail, and after four or five years their failure rates rise dramatically. Having such computer-like components in a consumer product effectively shortens its life to that of a computer. So you have to be ready for that.

But things have changed in this regard since we last had an Aurender in our reference system for review. Back in 2017 that was the A10, a streamer and server with a traditional hard-drive giving it 4TB of internal music storage. Slick as it was, great as it sounded, it still depended on that hard-disk drive.

Now we have solid-state storage, SSD: far more reliable, especially in the longer-term, though more expensive. In the A1000 you can install an SSD drive up to 8TB — the drive is optional; bring your own unless you arrange this with your hi-fi dealer. We were sent a little 500GB 2.5-inch SSD drive to go with the A1000 under review; it slotted in seconds into the screw-shut rear compartment, and once formatted, we had a far more reliable 434.55GB to load up with fine tunes. You would still want to maintain a back-up.

Meanwhile Aurender is fully aware that many users will likely these days be streaming at least as much as collecting their tunes, so the A1000 is both a streamer and a server — and a DAC, providing analogue outputs, which is why Aurender somewhat confusingly labels this digital multitool as an 'analogue player', to distinguish it from those which have only digital outputs. All clear? Let's get playing.

SUMMARY

Aurender A1000
Price: $6495

+ Thrilling sounds from buffered low-noise playback
+ Combines streaming & storage
+ Powerful app
– No negatives

Separate transformers are dedicated to each of the analogue, digital and display/control circuits. Dual AKM4490REQ DACs are nestled among four-capacitor groups upper right.

Build & facilities

This is a substantial source unit; it can often look smaller in pictures than it is, but this is a solidly machined aluminium chassis, a few inches short of rack width at 34cm, its silver fascia dominated by a large (7-inch diagonal) colour LCD display, various press buttons, and a nicely weighted knob to the right. This knob is a volume control — which you may never need if you're using the analogue outputs into a conventional integrated amplifier. But the Aurender's outputs can be switched between fixed full output and a variable signal under the volume control; this gives the option of running straight into power amps, using the A1000 as a DAC and preamplifier (though you'd want to be pretty careful not to feed them a full level stream by mistake).

Inputs. This kind of use as a preamp would presume no analogue sources in your system, because there are no analogue inputs available. But for digital stuff, there are plenty of inputs here. Computer users can use the USB-B input to play direct; there's an HDMI ARC socket to play audio from a TV. There's a coaxial digital input and an optical digital input, and there's a USB-A slot into which you can plug a stick or drive of files. Plus of course, there's the drive bay into which we had already loaded the SSD drive, and a gigabit-capable Ethernet socket to get the A1000 networked.

This is an important point in terms of networking: the A1000 must have a wired Ethernet connection, as it has no Wi-Fi available. You might cobble up a Wi-Fi adapter, but Aurender clearly prefers the reassurance of a good cable.

The analogue outputs are on sturdy gold-plated RCA sockets, while there are two digital output options available should you ever wish to run an external DAC. There's a coaxial digital output, presumably limited to the usual standard ceiling for S/PDIF of 24-bit/192kHz. But there's also a USB 2.0 audio output, which can deliver all the way to the top file handling ability of 32-bit/768kHz PCM, and native DSD512; these are what the unit can handle from files and via USB-B.

Streaming. But of course you might never use any of the A1000's inputs, and simply enjoy music via streaming.

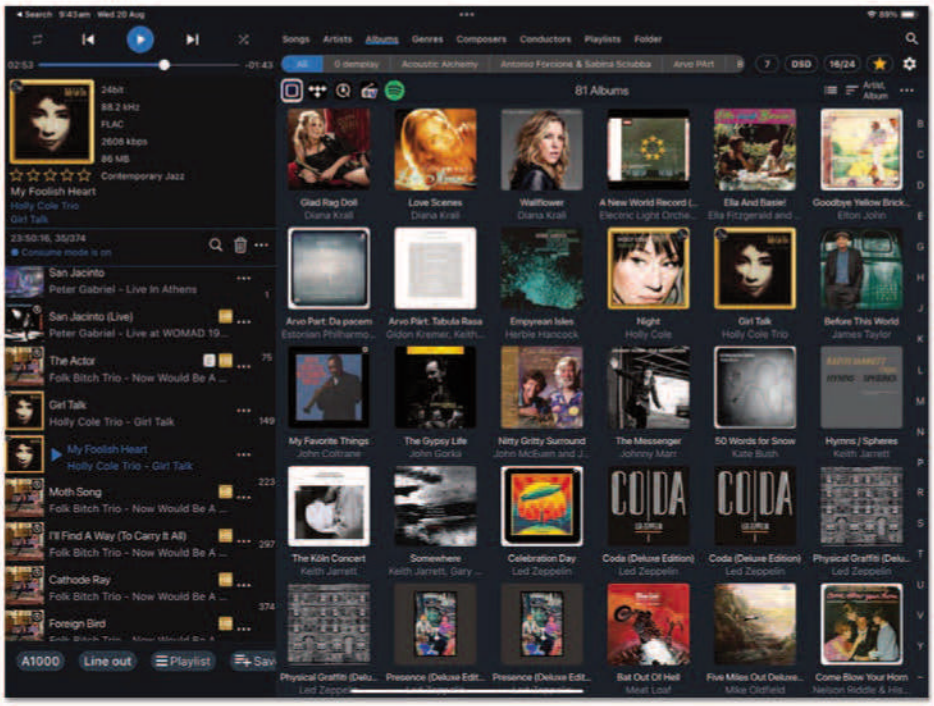
There is Spotify Connect, Tidal Connect, and now Qobuz Connect, all of which will use your phone or tablet to control the music while it travels direct to the Aurender.

For point-to-point streaming we thought there was no AirPlay here for Apple users, but there is — you just have to turn it on in the settings, where you add your subscription details for the other services. There's Google Cast, which claims it will stream up to 24-bit/96kHz, potentially from the likes of Qobuz, Youtube or Deezer. In our previous issue Stephen Dawson tested Google Cast's streaming and found that with 24-bit files it displaces one bit, the least significant, most likely while dithering: this adds a a white noise floor of -144.5dB, utterly inaudible. So this is a valid 'bit-perfect' streaming path.

There is also UPnP file playback from NAS drives, also a potentially bit-perfect method of playback. And all these will benefit from that RAM buffering to allow glitch-free jitter-controlled playback by the Aurender.

Finally there's Bluetooth: the codecs are stated as "up to aptX HD", so we'd guess there's SBC, hopefully AAC, classic aptX, perhaps aptX Low Latency, and aptX HD. This top codec has a maximum bit-rate of 576kbps, through which it tries to send 24-bit 48kbps, so is significantly lossy, even with CD-quality music. As normal, Bluetooth

While neat and spacious, the rear panel offers a good set of inputs — nothing analogue, but optical and coaxial digital inputs, USB-B from computer, USB 3.0 for sticks or drives, and HDMI ARC for playback from a similarly-equipped TV. Plus SSD/HDD and Ethernet-enabled streaming.



The Conductor app creates a library from SSD and USB-connected files; note that this screenshot shows Conductor 4, while a new Conductor 5 was introduced after our review.

should be avoided for anything other than convenience; better-quality music paths are not only available here, they are abundant!

The Conductor app. With the various 'Connect' streams, you would use the native app for control: Spotify, Tidal or Qobuz. But there's also Aurender's Conductor app. Back when we spent time with the A10, the app was available for iPad only, and was so essential to use that we advised budgeting for an iPad if you didn't already have one, because the Aurender really needed one.

This is no longer the case: there's now an iPhone version, and since 2023 also an Android version, so everyone can play. Having said that, Conductor is far easier to navigate with the larger real-estate of an iPad/tablet, for which it was really designed.

That's because Conductor is a platform which can scan your SSD (and now also scan attached USB drives and we think NAS drives, so long as they remain connected) to create a searchable library from all manner of files — compatibility extends to WAV, FLAC, AIFF, DSD (DSF, DFF), also MQA, and lesser file-types. We were given an inadvertent demonstration of the power of this system when we set it to scan our attached USB drive as well as its own SSD drive, forgetting this USB drive also held an old iTunes Music back-up. Surprise, then, later to find a huge database copying over to our iPhone Conductor app, announcing 5695 albums ready for search or discovery. Marvellous fun: stuff we'd entirely forgotten. Did this flood out the high-res? No, since you can filter for DSD and for '16/24', which seems to be full-fat CD quality and above.

"Audiophiles are often parodied for describing an 'inky-black noise floor', but you know what they mean when you hear it, and we heard it here: an impossible silence behind the piano and vocal..."

You can also search for a song or artist or album to get results across your music services (Spotify, Tidal and/or Qobuz), and then build up a queue for playback between streaming services and local files. Items on the queue seem to stay there forever unless you set them to disappear after playback, so you can have either build up a great list of history/favourites, or maintain a leaner temporary queue. And you can easily save any current queue to a playlist.

But we should limit our further description of the Conductor app's settings and playback methods, because we're aware that shortly after this visiting A1000 leaves us, the app will move from Conductor 4 to Conductor 5. We might perhaps assume that the new app will be superior, though of course Sonos proved a couple of years ago that this is not always the case! But it'll certainly be different, so that the screengrabs and descriptions here will no longer apply. So we may as well move along and tell you how the A1000 sounds.

Listening sessions

Because it sounds great. We started off streaming from Qobuz, and the Aurender immediately announced itself as a rock-solid streamer, delivering delightful detail, separation and staging. From an unexpectedly zingy flange to a guitar figure crossing the soundstage of Kate Bush's *Symphony in Blue* (from a 24-bit 2018 remaster of 'Lionheart' with thrilling quality once you settle into its softness) to the punchiness of the piano notes in the first verse of Lou Reed's *Perfect Day*: we were finding new things in old music. The buzz-rattle on the left-channel guitar strings of Folk Bitch Trio's *Hotel TV*, the near-subsonic throb of the bottom organ note opening Philip Glass' 'Koyaanisqatsi', the impossible clarity of the newly-released 1982 Womad live performance by Peter Gabriel: moment after moment we were enjoying the gifts served up by the Aurender's path to playback.

Would music from Aurender's SSD server sound still better, given that cached playback from a server is Aurender's special area of expertise? In theory, file-based playback shouldn't really outperform good streaming: Stephen Dawson's investigations in this magazine have proven that Tidal can arrive entirely bit-perfect; we assume Qobuz can too.

Yet something magical happened when we moved to playback from the SSD drive. We had initially plugged in our own old-style hard drive of high-res tunes to the Aurender's rear USB-A 3.0 socket, and then using the Conductor 4 app we had selected some 90GB of high-res favourites to copy over to the SSD. This copying process took about half an hour, no playback possible during that time, with a restart at the end.

The Aurender then scanned the files: we gather that the process reads embedded metadata, it uses folder hierarchy to infer album grouping and artist association, but we don't think it consults any third-party database like Gracenote or MusicBrainz. Yet it successfully built an almost complete set of album covers for our high-res tracks, delivering its searchable database of album, artist and track titles, on top of all the stuff from the USB drive.

We could search it all, or navigate by folder. There's composer and genre information (presumably when in the metadata), but no bonus album information, no sleeve notes, nothing like Roon offers, say — though the Aurender A1000 is officially Roon Ready and Roon Tested, so can be used with that paid software, though not, apparently, with the USB digital output. It's not very easy to get in and change whatever it's decided, though that is possible by logging on from a networked computer (because Aurenders also serve files to the network, as well as to their own playback system). We gather that easier direct metadata

editing will be one of the new features when 'Conductor 5' is released.

So, SSD now loaded and scanned, the first files that flowed from the freshly-copied folder simply via alphabetic advantage, came from Acoustic Alchemy's 'Roseland' album, the first track of which is *Marrakesh*, an instrumental which always sounds great, but we've heard the true tightness of its timing and the finely-wrought details in its soundstaging revealed before by high-end sources, and here the A1000 pulled every bit of detail (from its 96kHz and 24 bits): the transient plicks of the plucking, perfectly separated bass notes, delightful organ details. A better herald for the Aurender's off-SSD performance we could not have picked.

Shortly afterwards came Holly Cole Trio's 'Girl Talk' opener *My Foolish Heart*, complete with non-verbal sigh over its piano intro. Audiophiles are often parodied for describing an 'inky-black noise floor', but you know what they mean when you hear it, and we heard it here: an impossible silence delivered behind the piano and vocal as they languidly await the entry of the acoustic bass, a sense of purity in everything, a clear indication of an impeccable recordin. And most of all the music in the middle: real and ravishing.

These are the occasions when high-res files manage to convince us that those extra bits can deliver better than CD quality, for any of the several reasons proferred to explain what the inherent abilities of our ears should deny: more information, higher frequencies, more distant filter slopes, whatever; playing loud, with precision, it just sounds so good.

Use this silence behind a recording like the versions of *Fratres* with Keith Jarrett on the ECM 1984 Arvo Part 'Tabula Rasa' and the piano has a black curtain in front of which to project the rise and falls between delicacy and power, sometimes falling soft opposite the scything violin of Gidon Kremer, sometimes pounding its own attack. Played at just the right level, this became a true doorway to the original performance.

We were building up a queue, then relaxing to listen. One pick was from the unlimited 24-bit release of 'Band On The Run', a remaster which sounded sublime under the Aurender's auspices; *Bluebird* was a thrill of tone and depth and detail, from swelling bass strings to shimmering China Boy rivets, the mouth percussion details and almost casual harmonies as the sax solo searches for space: it's just more fun when heard with such clarity, as well as being more complete.

Why does it sound so good? Aurender doesn't proffer as much information on its extreme engineering as do some high-end server brands, its website speaking in more nebulous terms of their own hardware and software working in synergy. But the information is there. The power supply

includes a full linear toroidal transformer. The conversion is handled by two of the well-regarded AKM4490REQ premium 32-bit DACs, one of AKM's 'VELVETSOUND' line which chases wide dynamic range and high signal-to-noise ratios, here in dual mono configuration. There's that built-in caching to allow better control than a real-time digital signal, with 4GB of DRAM, 32GB of NAND flash memory for the system and 120GB of non-volatile flash for rapid caching. It uses clocking at precise multiples of file frequencies (or it did back in the A10's day, and we're assuming this hasn't changed) in its efforts to pursue ultra-low jitter. All under a quad-core 2GHz ARM CPU (the Cortex A55, an old faithful from 2017).

So the A1000 has a low-noise environment (high-quality power, no internal Wi-Fi) to generate carefully-cached digital data which then passes into top-notch digital-to-analogue conversion. And there you go: Aurender's equation for success in a nutshell.

There's another bonus here in a unique level of remote support. Aurender is a company based in South Korea with offices in California and Spain, and between them they offer each Aurender owner a 'white-glove' service in which they will respond to queries on "any aspect of system setup and maintenance… Aurender's technical support team is ready, willing, and able to help. This is The Aurender Way," they say.

We didn't get to use this service, owing to the rather boring (for a reviewer) lack of problems, but the local distributors speak very highly of it, as well they might, since it will save them from fielding support calls! But this shows the mettle of the company; it's obviously an excellent service to have attached to a product which, while simple enough to set up, may well have networking complexities with which users will need help. It can go beyond mere advice to provide actual remote support where they can fix up your specific system. Nice.

We haven't mentioned the remote control, mainly because we didn't use it until we were testing the HDMI input at the end. It's light, black and plastic — underwhelming compared with the build of the unit itself; that A10 back in 2017 had a far more luxurious wand. Yet it is Bluetooth rather than IR, so you don't need to point it, and since most people will be using a tablet to control the Aurender anyway, the remote may end up largely redundant, except perhaps to turn it on from standby, or to switch inputs, if you're using them. Otherwise why waste funds on it? So really we're grateful it's included at all. We do hate products without remotes!

What didn't we like? The file identification process might benefit from a third-party database, and the layout and design of the app could be a bit prettier — but it might become so when Conductor updates to v5. Even the price doesn't seem high: of course you can get streamers for hundreds of dollars rather than thousands, but when you feel the quality of the A1000 and assess the ingredients, and hear the results, we'd actually have guessed significantly higher than the $6495 at which it is currently priced here in Australia.

So this leaves us with absolutely zero negatives to throw at the A1000.

Verdict

Aurender's A1000 is a digital multitool: it's a preamplifier for digital inputs, it's a streamer for the major music services, it's a buffering server for your own music files whether on SSD files or stored around the home. And it does all this at exceptional audiophile levels of music reproduction. We will miss the Aurender A1000. +

SPECS

Aurender A1000 $6495

Digital inputs: optical, coaxial, USB-B, USB-A 3.0, HDMI ARC, Ethernet, Google Cast, Spotify Connect, Tidal Connect, Qobuz Connect, internet radio, SSD/HDD (optional), Bluetooth (aptX HD)

Outputs: RCA analogue out, coaxial digital out, USB audio out

Dimensions: 351 x 356 x 97mm

Weight: 8.3kg

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