



Review: Aurender X100L Music Server

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by John Grandberg

State of the Art

It's a great time for computer-based audio. Just ask Chris Connaker from Computer Audiophile. His site started in 2007 and has grown to become kind of a big deal. It's funny to read posts like THIS where he talks about getting the cold shoulder at T.H.E. Show (in 2008) from certain audio companies that didn't have any interest in "geek" equipment. Bet that hasn't happened to him recently, eh? Or how about Michael Lavorgna at AudioStream? In addition to his duties there, he was just tapped for a monthly column in Stereophile [*and it's about damn time -- ed.*]. Clearly, what was once a fringe aspect of the hobby has now gone mainstream; new optical-disc based players are becoming the exception rather than the rule, and I notice many of them have network playback capabilities and/or digital inputs for increased functionality.



I see more music servers (or streamers, or file players, or whatever we decide to call them) out there than ever before. Which is a good thing, of course, because that means more competition, more options to choose from, and ultimately more chance of you finding just the right model to fit your needs. Unfortunately, it looks like retailers are struggling to some degree, trying to get a handle on *just what exactly* to do with this category. They *want* to support it and *definitely* want to sell you something, but many haven't quite figured out how the structure works. An example: I notice Music Direct and Audio Advisor both have categories titled "computer audio". Which is a good start. Inside you'll find a huge mix of USB cables, DACs, desktop speakers, Ethernet cables, wireless streaming devices ... basically if it has a USB connection or can somehow interface with a computer (Bluetooth for example), then it fits in the category. Which makes sense I suppose ... but how do I find a dedicated device that *replaces* my computer in the audio rack? I end up having to scroll through and find them individually, buried in a sea of other stuff. I don't mean to pick on these websites — indeed I have much respect for both companies — but I think this sums up the current "state of things". Consumers know what they want, manufacturers are just now starting to come on board, and retailers are still working out the details.

In just the past two years or so, I've spotted a number of interesting developments in this field. In particular I've noticed a proliferation of options in the upper end of the market. The early entries like Meridian's Sooloos line, or the British dynamic duo of Naim and Linn, have been joined by a fairly broad range of new choices. I see rather expensive models from Acoustic Arts, Lumin, and Ayon Audio, along with slightly more affordable (but still audiophile oriented) options from mainstream brands like Sony, NAD, and Marantz. One of the top dogs that I've seen gain widespread recognition from consumers and reviewers alike seems to be the Aurender W20. At \$17,000, the W20 isn't cheap, but seems to be "worth it" for those folks using extremely high-end systems. Aurender's first model, the S10 (around \$7,000) also earned quite a few rave reviews. At this point, I'd call Aurender one of the premier names in this ever-evolving field.

Now, I do love seeing gear that really pushes the boundaries for what can be done. But let's be realistic — most of us prefer to sit back, wait for that technology to “trickle down”, and then buy the later models which are often significantly more affordable while giving up just a small amount of performance to their flagship siblings.

Aurender has begun to trickle.

A “mini” Aurender Music Server

I'm referring, of course, to the Aurender X100L. It's part of a new X100 line just released by Aurender few months back, comprised of the X100S (\$2,999) and the X100L (\$3,499). At significantly lower prices than the other Aurender models, these guys bring the performance and usability of the acclaimed S10 and W20 within reach of a much larger audience. And as I'll explain, they sacrifice very little when used in the right context.

Let's take a look at the basics of the X100 models. The two are similar in a variety of ways: common features include a custom Linux-based OS, 4GB of RAM, 120GB solid-state drive for the operating system as well as for music caching, custom fanless 100W switch-mode power supply, Gigabit LAN connectivity, and dedicated high-quality USB section as the sole output. The place where they diverge is size, both physically and in terms of storage. Their enclosures share the same height and width but the X100L is nearly 4 inches deeper. This is required to accommodate the pair of 3TB hard drives on board — X100S uses a single 1TB laptop style (2.5") drive to save space. Aside from that difference the two should be functionally indistinguishable, so from now on I'll only address the X100L since that's the model I've been playing with these past few months.

Let's dive right in and take a closer look at those specs:

- **Custom Linux-based OS.** Yep, makes sense. Many an audiophile have discovered the virtues of Linux when it comes to *really good* computer audio. There's just less “stuff” going on in the background, which we obviously won't need in a dedicated audio device. Thus, a lower spec machine can still outperform a powerhouse Windows or Mac device. Or so the theory goes. I'd say a large majority of the “serious” music server devices out there run some form of Linux.
- **4GB of RAM.** Seems like enough considering what we need to do, theoretically, this should load one full track at a time for memory playback — assuming that's how Aurender implements their playback. As I browse my library, I don't see any tracks coming close to this size. A roughly 10 minute Beethoven piano sonata in DSD64 format clocks in at just under 300MB. That same track in DXD (which is really just supercharged PCM at 24-bit/352.8kHz) is a little over 1GB. So, worst case scenario — all 23:31 of “Echoes” by Pink Floyd, in DXD or even quad-rate DSD (aka DSD256), would still leave plenty of headroom for system operation. And that track is not (and may never be) even available in those formats. To keep it in perspective, the Mobile Fidelity Sound Labs CD version of that tune is a mere 120MB. So, yeah, 4GB seems like plenty, especially considering the streamlined OS which doesn't hog much RAM.
- **Two 3TB hard drives.** The X100S only has 1TB of storage, which for me seems a little small when considering long-term use. I suppose if one had a library purely centered around CD rips, then 1TB would be plenty. That's roughly 3,000 CDs, give or take, using the FLAC format. Not too shabby. But most folks will probably want to dip their toes in the hi-res pool

if they haven't already done so. That stuff tends to chew through storage rather quickly. 24/96 PCM albums are usually at least 1GB, and DSD128 albums can approach 3GB. Someone building up their collection with at least a few hi-res albums per month, plus importing a sizable number of CD rips, could soon end up running short on space. The X100 series does not allow for increasing storage via external USB drives either, so the X100L really makes sense in my opinion. 6TB should serve most people, even those who want to play with hi-res well into the future.

- **120GB SSD.** Why do we even *need* an SSD in the first place? Well, for starters the OS lives there. That makes it considerably quicker for system operations as compared to a traditional spinning platter drive. But that shouldn't take up more than a few GB. The rest of it has another use — Aurender has a multi-layer system in place for achieving absolute best performance with the least amount of noise or activity. When you choose an album, or put together a playlist, that stuff gets pulled from the storage drives and placed on the SSD. The storage drives can then spin down and rest, while the SSD serves the tracks I need into RAM for playback. One step at a time, each part doing what it's good at. This music will stay on the SSD until it fills up and needs to make room for other selections, which could take many weeks or months depending on your listening habits.
- **Custom fanless 100W switch-mode power supply.** Huh? SMPS in a “high-end” audio device? Sounds suspicious right? Actually, it's not all that shocking as far as I'm concerned. NuForce does it. Chord does it. If done well, the results can be quite good indeed. And besides, Aurender uses the same thing in their other devices. The S10 has a hybrid system with the SMPS doing CPU and hard drive duties with a separate linear PSU supplying the analog output section. In the W20, that linear PSU is replaced with a LiFePO4 battery system, but we still get the switch-mode supply handling digital duties. With the X100L, there's no analog output section to be dealt with, so all we need is the single SMPS. Other factors — Aurender's Charles Kim tells me the CPU and dual hard drives take a significant amount of power. A linear power supply at the required 100W would take up more enclosure room than they can spare, and cost plenty of dough in the process, while adding nothing to the equation for actual audio quality. So ... SMPS? Yep, seems like the right choice.
- **Gigabit LAN.** Aurender seems to be in agreement with some of their competition (Lumin and Linn to name a few) in that they don't want Wi-Fi adapters placed too close to their core components. A hard-wired connection is therefore absolutely required. This makes total sense to me, as one can easily use a wireless bridge nearby, thereby satisfying the demand for Ethernet without actually running cable through the house. If cable is already in place then you'd be all set from the start. I realize some other brands have built-in Wi-Fi but I've always found hard-wired Ethernet connections superior, followed by a wireless bridge setup, with built-in Wi-Fi in a distant third place. I'm not making any claims about sound quality but rather speed and reliability, as I've experienced it across the board for computers, Blu-Ray players, and network audio devices. Gigabit may be overkill at this point but future proofing is never a bad thing.
- **Dedicated USB output.** This is critical, especially as it's the sole output on the device. The S10 and W20 have analog outs as well as legacy SPDIF connections. The X100L is strictly USB, so it had *better* be good. To that end, Aurender uses a custom designed dedicated-for-audio solution where the output gets filtered by low-noise precision linear regulators and low internal resistance capacitors. The result is a clean signal with very low jitter, similar to the popular SOTM USB cards in both concept and execution.

As you can see, Aurender really paid attention to the details. That's absolutely *critical* in my opinion — especially for a system costing a decent amount. If we aren't getting every little thing right to maximize the experience, then we might as well just use a laptop and call it a day. Or at least use a more affordable stand-alone device — the \$800 Cambridge Audio Stream Magic 6, for one example, or maybe even a used Logitech Squeezebox Touch for around \$300. At those prices, we can forgive some aspects of the design not being perfect, which doesn't hold true for the more expensive options.

The way I see it, there are three distinct areas we can compare for music servers: external appearance, user interaction, and ultimately, the sound quality. Now that we've covered most of the technical aspects of the design, let's explore those three areas.

External Appearance

It may seem trivial, but most of us want good-looking components in our systems. Sometimes, we'll sacrifice a bit in this area if the sound is worth it, or if the price is right ... but we really prefer not to. The X100L doesn't sacrifice. Check out my pictures to see the incredibly well-built enclosure, which doesn't look at all out of place even among more expensive components. At over 16 pounds, it sure *feels* solid enough. The front panel OLED display is large enough to be seen from across the room but is *not* gaudy and won't dominate your equipment rack if that's a concern. The enclosure is roughly 8.5 inches wide making it a so-called "half width" component — basically the same look as the S10 and W20 but cut in half. This allows it to double up, sharing space on the same shelf with a similar device. As a user of multiple DACs and headphone amps in the same audio rack, this comes in very handy for me.

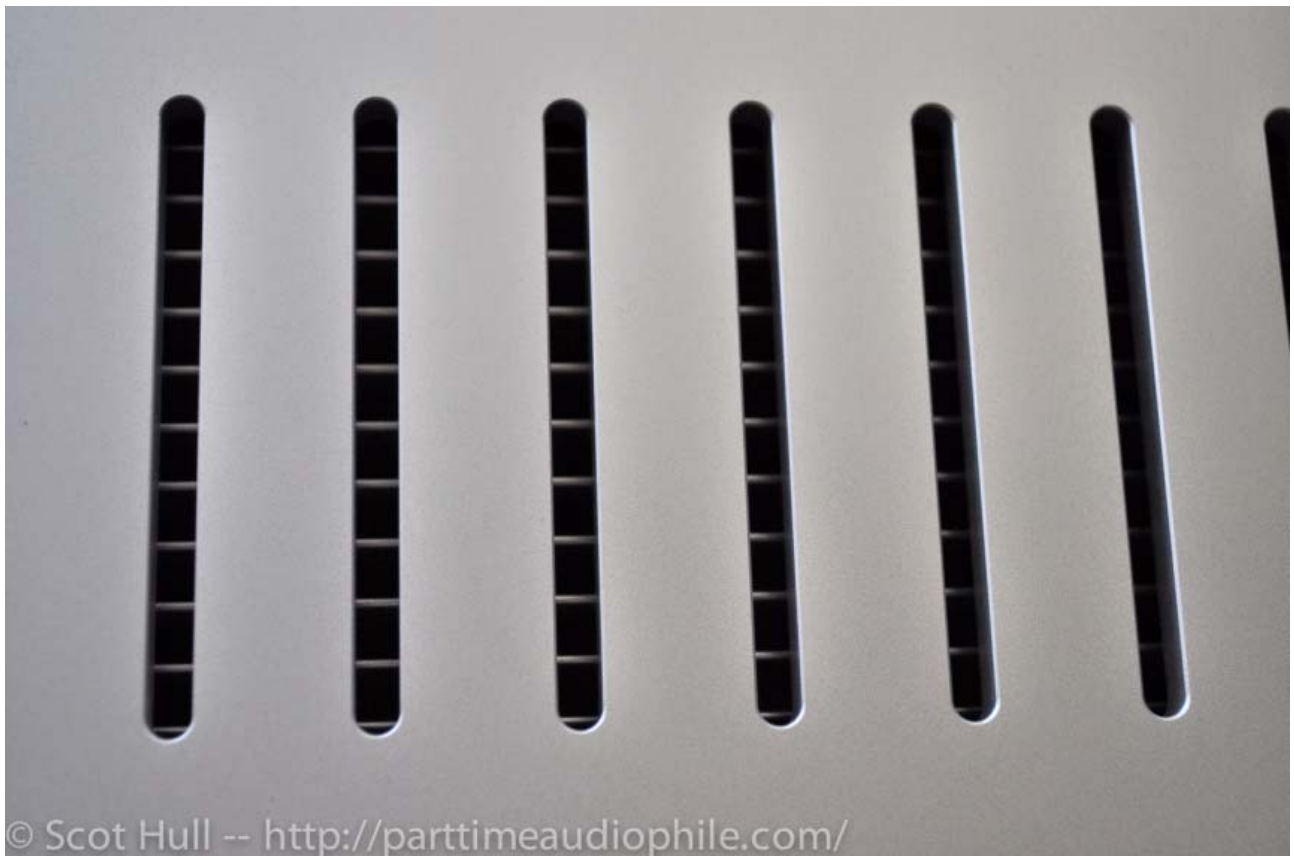


At this point, I'd like to use the Auraliti PK90 to set the standard. I reviewed this device here not long ago and the PK90 performs far better than the \$949 price would suggest. Can the Aurender possibly be worth the price difference? Aesthetically speaking, the PK90 is built well enough but it isn't anywhere near as slick-looking as the Aurender, and the external power supply (an extra \$400 option) doesn't really match the appearance. The X100L simply *looks* like a more expensive



component what with those etched logos and side fins and everything. What about using a laptop? That's a quick and easy solution but sticks out like a sore thumb among high-end audio gear. And for my rack it's simply not tenable anyway ... I'd need to keep the top shelf free in order to access the computer, which is kind of a no-go for me – that's valuable real estate. So, aesthetically speaking, the X100L has a significant leg up.





User Interaction

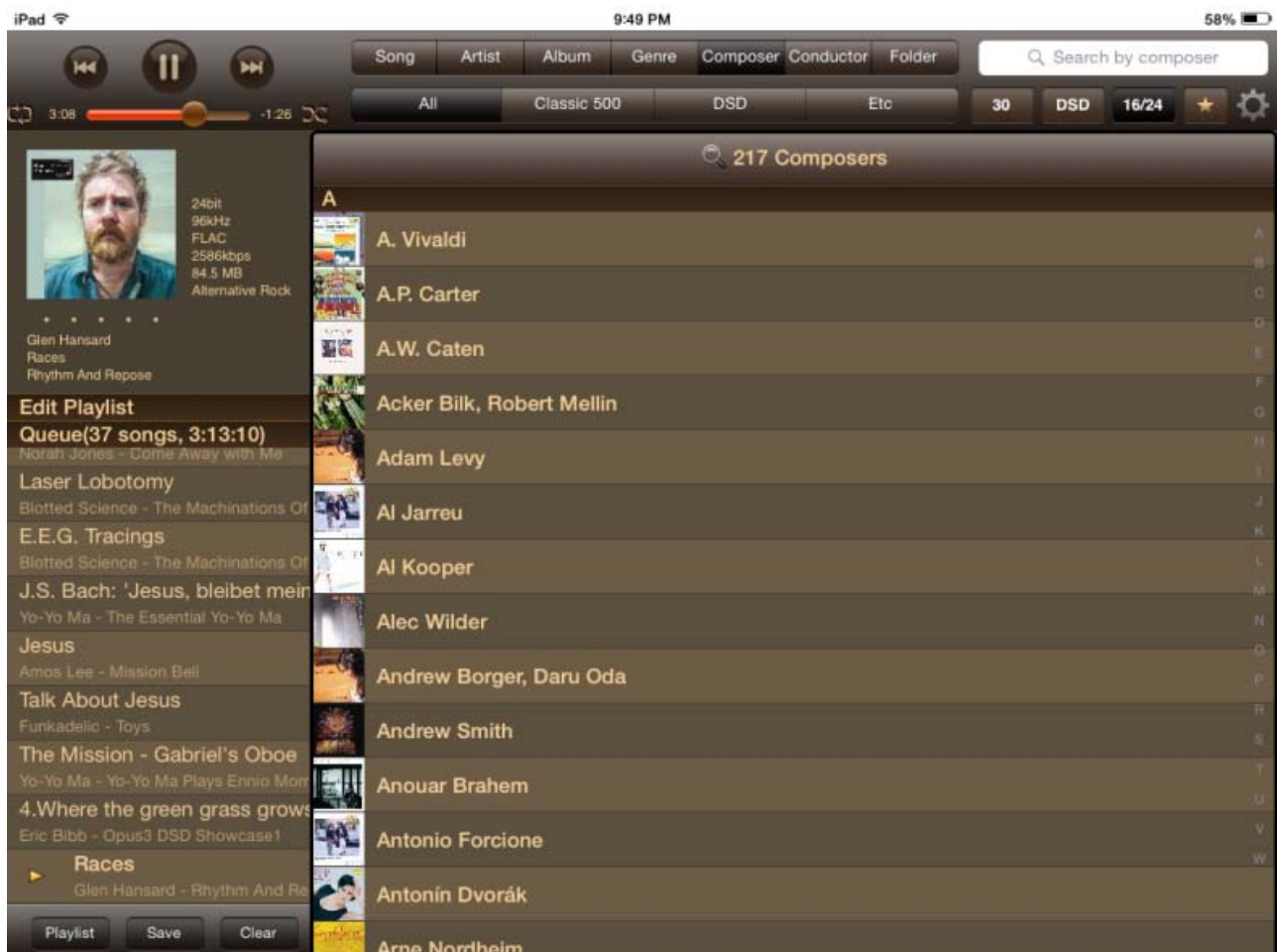
This is another critical aspect, so important yet so easy to mess up. Where the Auraliti PK90 is truly “headless”, the X100L takes a two-tiered approach. Control is primarily done through an iPad (Android app coming later this year) using the excellent Aurender app. But since it has a front panel display and simple transport buttons, the device can be used without an iPad, at least to a limited degree. You still definitely *need* an iPad ... it’s not optional. But once you have an album or other playlist loaded, you can put the iPad down and operate from the front panel for simple tasks like skipping tracks or pausing. As a headphone user, I’m usually sitting right next to the device anyway, so I find this particularly convenient. It also shows artist info, song name, remaining time, etc, which is nice to have available at a glance. Overall, I’d say the front panel layout nicely augments the app — at first I wished the buttons did more, but I now realize that more complex controls would be difficult or impossible to implement without detracting from the elegant simplicity of the design.

The limited front panel display and buttons only make sense if paired with an excellent app. Fortunately, the Aurender app is quite simply the most impressive software of this type that I’ve yet encountered. My point of reference was mPad for the Auraliti, which is a very solid app. Prior to that I was using a Logitech Transporter with the iPeng or Squeebox apps, both of which are quite nice as well. Those were my main app experiences but I’ve used half a dozen others over the past year or so, and my conclusion so far is that Aurender’s solution is my favorite. It does everything I want without bogging me down with an overabundance of useless options that I’ll never use.

Initial impressions were somewhat impacted by the brownish color scheme. That’s not my favorite color and it certainly doesn’t “pop”, but eventually I discovered it to be more easy on the eyes

compared to the blue and white mPad color scheme. Once I got past that it was smooth sailing from there — I was constantly impressed by the way Aurender chose to implement things. Every button or action seemed so intuitive, that I found myself mastering the app within the first few uses. It was simple, but also powerful. The simple stuff — searching by artist or track name or composer — is all there. But I also love the more in-depth functionality which is there if I ever need it.

In particular, the search and filter options are very handy. Want to easily find all your 24-bit/192kHz tracks? That's simple. Want to display only DSD material? Sure. Or maybe your DAC isn't DSD capable so you want to leave that stuff out? Not a problem. Create and edit playlists on the fly? Of course. Want to search by conductor? Yep, if it's in the meta-data, it's easy to do. If you haven't meticulously tagged your music as you built your collection, I recommend [Bliss](#) as an excellent way to get caught up. Devices like this *really* depend on accurate tagging, and if your library is full of improperly tagged albums with no artwork, you won't get the full experience. Once you get organized though, browsing is more effective than it ever was with a giant CD rack. True, there's something inviting about holding physical media, reminiscing about the time when you first purchased that CD back in the day, but get past the sentimental part of it and I think most of us would choose a well-indexed digital library any day of the week.



I really can't say enough good things about this app. I did capture a bunch of screen shots and while I realize they can't tell the whole story, at least they should give a decent glimpse of how well done everything is. The app has configuration options to tweak the X100L to your liking. Again, attention to detail is the name of the game. If your DAC takes some time when switching from one sample

rate to the next, the Aurender can automatically insert a second or two (or more) between tracks so the music doesn't get cut off. Or if your DAC or amp makes a "pop" noise every time you pause and resume a track (not super common but I've experienced it a few times) the X100L can do a fade out/fade in to avoid that annoyance. The front panel OLED display can be adjusted for brightness or completely disabled while the music plays. See what I mean? Attention to detail is very strong here, allowing the user to customize the system to maximum benefit.

Let's talk about NAS connectivity for a second. The NAS, or Network Attached Storage, has become a more and more common way for audio lovers to store their huge libraries and serve them up to various networked devices around the house. The X100L can of course pair with a NAS and play any music it finds on there. As with many streamers I've encountered, the experience is a little different when used in that way. The system can't index files the way it can with local storage, so we end up just browsing by folder rather than artist, album, etc. If your library is organized like mine then it's not too difficult to browse by folder, but still ... the experience does take something of a hit. I often like to search by keyword – for example, I search for "Hallelujah" and get the various Leonard Cohen versions, the ubiquitous Jeff Buckley, and a host of others from K.D. Lang, Brandi Carlile, Rufus Wainwright, John Cale, Regina Spektor, Allison Crowe, and so on. This isn't possible when browsing a NAS. Or, say I want to search for all versions of Beethoven's Symphony No. 9. Not a problem for stuff on the internal drives, but it won't work with the NAS. Again, this is fairly common among the various streaming devices I've used. Unlike many of them, however, Aurender really intends for us to store our entire libraries on the local hard drive and supplies us ample space to do so. NAS playback is thus more of a secondary option rather than the primary use, and this drawback is of less significance than it otherwise might be.

To make matters even more interesting, Aurender allows the X100L to actually *become* a NAS of sorts. The "NAS share" function allows the device to be seen by others on the network, just like a dedicated NAS would be. So when I'm on my iPad in the back yard, or using my Dune HD Max network media player in the living room, I can still have my entire music library at hand. If someone doesn't already have a dedicated NAS, or maybe they have one but it's full of pictures and other boring non-music stuff, the X100L gives 6TB of network accessible goodness — which is rather convenient I'd say.

Speaking of networks — you'll want to make sure your connection is nice and stable. I use a MoCa network which carries the signal over coaxial cable, but you could just as easily use Ethernet or even a wireless bridge device. Either way, reliability is the key. Since we have all our files on the local drive, we don't even necessarily need all that much speed for the connection. I tested an aging 802.11G router in wireless bridge mode as a sort of worst case scenario. Even with a paltry 2 Mbps connection (the router is on its last legs for sure) performance was flawless — until I tried streaming Hi-Res tracks from the NAS. In daily operation the network is only used for communication to the iPad and the occasional music database updates, so even that terrible network connection would be fast enough. My usual MoCa connection at roughly 90 Mbps can easily stream the highest bitrate PCM and DSD tracks without issue.

On the other hand, there *is* one situation where speed comes in handy: transferring music to the device. With the X100L on the network it's a simple matter to drag and drop music onto its hard drives. The transfer does take a while though — especially when you have multiple terabytes to move. With my 90 Mbps MoCa bridge I found it best to do a few hundred gigabytes at a time, then pause and make sure everything transferred properly (which it did). If I had a gigabit Ethernet cable running to that side of my house the process would go a lot quicker. 802.11AC wireless bridges are often unreliable in my experience (reviews at Newegg and Amazon seems to agree), so I'd rather

wait for them to mature rather than trade reliability for speed. Aurender does allow direct transfer by connecting a drive to the rear USB port, but it's really intended more for something like a 16GB USB flash drive than a massive hard drive full of music. I tried it with a 1.5TB external drive and not only was it slower than expected, it also acted strange and locked up several times. It eventually got the job done but I think the network transfer method is far superior. The USB ports are still nice in case a friend brings over some music on a flash drive, but a huge file dump is probably not advisable.



Sound Quality

After all this talk of setup and configuration, filtering options and library management ... how does the X100L actually *sound*? As always, that's a tougher question with a transport than it is with speakers, amps, or headphones. The transport is not an isolated component and therefore requires more time spent pairing with various DACs to get a feel for its character. Some reviewers would have you believe it's a simple thing to hear, that you'll immediately notice *sweeping* differences even between two very high quality transports. My experience tells a different story, one of subtleties and nuances born out through long-term listening. There are, of course, some transports which have a definite "character" no matter what DAC they end up pairing with. There are good transports and bad transports, and sometimes it *is* fairly straightforward to tell them apart. But once you reach a high enough level of competency then it's a bit less easy to define. That said, I do believe there are differences that can eventually be identified and – in the case of the X100L – immensely appreciated.

The X100L has all the technical chops to be considered a top class transport. Period. I don't mean "best in this category" or "best in this price class". I mean top-level, take-no-prisoners, anything

goes territory. I wouldn't hesitate to put this thing up against the best I've ever experienced, up to and including past favorites like the Esoteric P70, Marantz SA-1, or the C.E.C. TL1N that I currently have on hand (roughly \$10K depending on the exchange rate). These disc-spinners are the best I've experienced but they simply don't compare when it comes to the precision and delicacy of the Aurender. If I remember correctly, the C.E.C. also uses an advanced switching power supply — once again validating Aurender's choice on that end.

So, what does the Aurender do better? Well, a little of everything, really. It's got a blacker background, seemingly limitless dynamic range, startlingly accurate imaging ... and that bass response. Yikes! You thought your DAC sounded a bit thin and polite? Maybe you just haven't fed it a good enough signal. And remember, I'm not comparing the X100L to any old run-of-the-mill budget CD player. I'm talking reference level stuff with 5-digit price tags here. As counterintuitive as it may seem, this \$3,500 device beats all comers, even those costing two or three times as much. And don't forget, it has way, WAY more functionality as well. Bonus.

What was especially impressive to me was pairing the X100L with a relatively affordable DAC in the \$1,000 to \$2,000 price range. This segment has really exploded lately and is home to a number of excellent options. The Benchmark DAC2 HGC, Aneodio D2, and BMC PureDAC all sounded exceptional when fed a squeaky clean USB signal from the X100L. I'd venture to say each one moved up a whole class in transparency as compared to using a more pedestrian (but also more expensive!) disc-based transport. These are already very high value devices, so extracting even more out of them is impressive. I've said it before and I'll say it again — people looking for an excellent DAC should demo some of these models before just assuming they need to spend more.

This sort of thing just isn't supposed to happen, right? Expensive stuff doesn't get trumped by more affordable gear ... does it? Yes, it actually *can* and in this case it absolutely *does* happen. I picture some well-to-do reader expressing outrage at that statement, dropping their monocle into their bowl of caviar (~~just send the bill to Scot Hull~~ [hey, wait a sec ... -ed]). But what can I say? It's a difference I heard fairly consistently across many different DACs in many different system configurations.

Using a headphone system affords me that benefit — without having multiple listening rooms, I can easily switch from a planar magnetic transducer to a dynamic to electrostatic to balanced armature, and give each one their own optimal amplification. It's like having top models from very different speaker brands like Magnepan, Rockport, MartinLogan, Revel, Quad, etc, available whenever I want. Pretty handy right? So, I use the Sennheiser HD800 for exploring detail and the sense of space in the recording, while the Audeze LCD-3 and Noble 8C are better at showing how visceral a component can sound. The Stax electrostatic system is tops for timbral accuracy as well as note attack and decay. You see where I'm going with this, right?

So, using all the tools at my disposal, I spent a significant amount of time pairing the X100L with different DACs and then comparing the results to the TL1N transport. In nearly all of the cases I favored the Aurender — the Resonance Labs Invicta Mirus, Calyx Femto, Aneodio D2, Benchmark DAC2 HGC, Auralic Vega, Esoteric D-07x, Violectric V800, and Questyle CAS192D, all did their best over Aurender's fabulous USB connection. And when I say "their best" I actually mean it — the X100L brings out the absolute best I've heard with every single one of them. Better than the expensive TL1N, better than the Auraliti PK90 I previously raved about, better than any similar device I've recently auditioned from McIntosh, Naim, Olive, and others.

One thing I really enjoyed was pairing the X100L with a good all-in-one DAC/headphone amp device. This made for a relatively compact system with the potential for absolutely *killer* sound

quality. The Anedio D2, the Resonance Labs Invicta, and Violectric V281 (configured with the 24/192 USB option) all did a *superb* job and fit happily right on top of the Aurender. Can you say “bedside rig”? Care must be taken to use a DAC/amp which is deeper than it is wide. The wider, less deep format used by Benchmark, Grace Design, etc won’t work here.

Going the other direction, I also gave my reference gear a real workout. I assembled a few different systems, sprawling with complexity, and the X100L always fit right in. I particularly enjoyed it paired with the Resonance Labs Invicta Mirus, feeding a custom-built Kevin Gilmore Solid State High Voltage (KGSShv) electrostatic amplifier, driving my Stax SR-007 or SR-4070 earspeakers. I also loved the results when using an Auralic Taurus amp or a pair of Questyle CMA800R monoblock headphone amplifiers (yep, that’s a thing now) driving a top dynamic headphone like Audeze LCD-3, HiFiMAN HE-6, or Sennheiser HD800. The possibilities are endless, but the bottom line is this: if you have an extremely revealing setup, the X100L will usually pay dividends.



Counterexamples? I did encounter a few. I found the Bryston BDA-1 still preferable via coax, likely a result of its rather limiting Adaptive Mode USB implementation. Even a modest transport using coaxial output was consistently superior with that particular device. I also noticed the Meitner MA-1 had a slight “fuzziness” over USB — it still sounded quite good, but in comparison to a nice transport using SPDIF it wasn’t quite as clean and lifelike. I’ve heard complaints about their USB implementation in the past, and I suppose I’m inclined to agree (it’s still a great DAC though).

One interesting aspect is when mixing the X100L with a USB to SPDIF converter — I tried the Audiophileo 1 with PurePower as well as the more affordable Stello U3. As it turns out, the USB connection is already *so good*, that the Stello just isn’t useful. Even adding a top DDC like the Audiophileo doesn’t typically add much to the equation. The results vary from DAC to DAC based on how their USB implementation is handled — some devices sound better straight from the X100L

while other times the Audiophile setup edges it out. I'm talking 5% gains though ... generally nothing drastic. In many cases — especially with very nice DACs in the \$4k and up range — it's more a case of *very slightly different* rather than better or worse. Nothing that would justify the added \$1,400 for the Audiophile setup. This makes things interesting because I still find the Audiophile essential when using my Dell PC or MacBook Pro in a high-end system. Despite using dedicated playback software like Audirvana and JPLAY, it seems the basic USB output remains the weakest link.

Aurender does have their own matching USB to SPDIF converter in the works and I'm told it should be available in early 2015 (or possibly a bit sooner). I don't know if they intend it to be an all out assault *à la* Berkeley, Empirical, and Audiophile, or a more affordable and utilitarian design. The DDC market is certainly crowded as it is, but then again I'm always a fan of gear from the same designer, matching in aesthetics. So we'll see how that goes.

Sticking with USB, the X100L should happily pair with most DACs — anything compliant with USB Audio 2.0 should be good. Aurender maintains a list of compatible devices based on customer feedback, and it reads like a veritable who's who of top names in digital: Playback Designs, MSB, Benchmark, EMM Labs, Luxman, Meitner, Bricasti, Weiss, Chord, dCS, Metrum, and Ayre just to name a few. I initially had trouble with the B.M.C. PureDAC, but a firmware update from Aurender took care of that issue. The Chord Hugo only partially worked ... It has two USB inputs — one a modern USB Audio 2.0 and the other a throwback based on the old Texas Instruments PCM2706 USB receiver. The legacy input worked but the modern, hi-res, DSD capable option did not. It's worth noting that I have a very early Hugo on hand, and I know there have been several tweaks since the initial release. Perhaps a new version would be fine, especially since Aurender confirmed compatibility with Chord's Qute line of products. There may be a few other exceptions out there but for the most part any DAC you have your eye on should be fair game.



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On Value

Given the level of performance and refinement of the X100L, I see it as a strong value. The price might initially seem high but let's do some math: a MacBook Pro (let's use the 13-inch model at \$1299), plus the Audiophileo 1 with PurePower (\$1399), with a decent NAS (let's use a Synology DS214 at \$299), using a pair of 3TB hard drives (\$250), topped off with Audirvana Plus (\$49). That total comes within a few hundred dollars of the X100L. We could spend more by doing the 15-inch MacBook and a 4-bay NAS (for future expansion), or we could spend less by using a Windows laptop and using the more affordable Audiophileo 2. Either way, it seems the X100L is not at all unreasonably priced for a dedicated high-end device. This makes me happy because it gives up nothing compared to its far more expensive siblings, at least when used strictly as a USB transport. Getting the same quality as the \$17k Aurender W20 in a \$3500 device? Yes, thanks.

Final Thoughts

You'll notice I spent a rather large percentage of this review writing about the X100L user experience. This is no accident. Disc-based transports rarely need more than a sentence or two, unless they are so bad as to deserve more extensive criticism. But even then it's a simple discussion — loading too slow, buttons unresponsive, things of that nature. The X100L experience is a whole different animal and really deserves as much attention as possible. User interaction one of the key benefits of a device such as this, and in my opinion Aurender



absolutely *nailed* it. Oh, and the sound quality? Superb. Factor in the attractive appearance and the relatively low price (for what it is), and the X100L earns my absolute top recommendation.

About the Author



John Grandberg can normally be found contributing to InnerFidelity.com where he covers “personal audio”, which includes headphones and amplification, desktop speakers, portable players, etc. He has a decent speaker-based system but spends most of his time with tiny speakers strapped to his head, or sometimes even inserted into his ears. Gross. John tries his best to eschew purple prose but occasionally has trouble avoiding sesquipedalian loquaciousness. Shockingly, he doesn’t “do” vinyl, being utterly content with his ever-growing collection of music stored in lossless digital form.

He is terrible at photography and apologizes in advance for the shoddy pictures he might force upon his hapless readers. Consider yourself warned.