Computer Audiophile
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Aurender N100H Music Player Review

by The Computer Audiophile, Published on 06-25-2015

I've been using Aurender music servers for several years. In 2011 I reviewed the Aurender S10 and in 2014 I reviewed the flagship W20 model. I've watched the company closely over the years, including traveling to its headquarters in Seoul, Korea in 2013. During this time Aurender has made substantial improvements to both its hardware and software. Features that used to be unique have become commonplace and no longer set Aurender apart from the crowd. Continuing to evolve and lead has meant integrating features like the TIDAL streaming services at a very high level and releasing the free product update to its customers quickly. I will not be surprised if Aurender updates its products to support Roon as an audio endpoint (RoonSpeakers) soon after Roon Labs releases its software development kit (SDK). In addition the company has recently expanded its line of server products to include the X series, globally launched in 2014, and N series. Prices for Aurender's entire line range from the entry level N100 at $2,499 to the pièce de résistance W20 at over $17,000. No matter what Aurender hardware one uses, the software is the same. Customers who buy into Aurender at the entry level receive the same software as those using the top-of-the-line. With very few exceptions for items requiring AES or S/PDIF output the software functionality is identical. Over the last few weeks I've been using the Aurender N100H with my current reference system. The sound quality from this system has been stellar as has the entire experience. The new Aurender Media Manager (AMM) application, updated iOS app, and the N100H hardware itself combine to make a very solid solution that touches all the bases for many music aficionados and audiophiles alike.

Details: Hardware

A cursory look at the Aurender home audio product line may leave potential customers with a few questions as to which model fits their needs and how to differentiate between the models. The easiest way to start whittling down the number of potential options is to consider which outputs one needs. Aurender music servers don't have internal DACs, thus users should consider both the Aurender and the DAC when looking at the options. Consumers requiring more traditional audio outputs such as AES, S/PDIF, and TosLink should look at the W20 and N10 models. Consumers requiring only USB outputs to connect to their USB DACs can pare their choices down to the X100L, N100, or N100H. Setting the X100L apart from the N series is its massive internal storage capability of 6Tb or 12TB. If massive local storage is desired in combination with a USB output, then the X100L ($3,899) is your product. The N series of Aurender units is mainly characterized by the ability to stream music from a Network Attached Storage (NAS) drive while maintaining all the benefits of local storage such as great metadata and searching. The N100 features a single 120GB internal SSD for caching music streaming from the NAS. Its apt description on the Aurender website says its a caching network streamer. The N100 is

differentiated from the N100H by the addition of a 2TB hard drive in the N100H. Thus, the model H can serve has a caching network streamer, a server with only internal storage for those with collections smaller than 2TB, or a hybrid of both network and local storage. At $2,699 the N100H is only $200 more expensive than the N100 ($2,499).

Note: Here is a flow chart from the Aurender website that helps one whittle down the options and here is a comparison table for the more text oriented readers. Flow Chart | Comparison Table

The Aurender N100H features something new for Aurender, a full linear power supply (35W). This powers both the CPU circuit and the audio output circuit. This linear powered USB audio output, originally developed for the W20 model, is very low noise and shielded from electronic interference. In addition to this custom USB audio output, the main board in the Aurender N100H is a custom design, not an off-the-shelf motherboard made by one of the large manufacturers such as ASUS, ASRock, Intel, Gigabyte, etc… The N100H can output all major lossless PCM file formats up through 32 bit / 384 kHz and DSD (DSF & DFF) in either 1 bit / 2.8 MHz (DSD64) or 1 bit / 5.6 MHz (DSD128). The N100H can't convert DSD to PCM on the fly like the W20 and N10.

The N100H features a 1 Gbps Ethernet connection that improves the speed of copying files to the unit, over devices with a 100 Mbps connection, greatly. It's hard to believe but many devices in high end audio still use 100 Mbps Ethernet. The faster 1 Gbps may not be necessary for streaming audio on other devices, but 1 Gbps has been the standard for seemingly ever on many devices outside of audio that one would think it would actually be cheaper to use the most widely used speed. Anyway, enough about Ethernet speed. Before the N100H plays a file streamed from a NAS over Ethernet, it caches the file to its local 120GB SSD. Caching files to the SSD is said to have sound quality benefits, however without the ability to enable/disable this feature I can't independently verify the claim. There is no doubt that caching files reduces latency and can help users in the case of a less than good network (I'm thinking something like a wireless bridge) because the files are already on the N100H. There is an ever so small speed difference between playing a file for the first time and playing that file again when it's already sitting in the SSD cache. The fact that I mentioned this is almost overstating the difference because it's that small, at least on my network.

Note about cached files: A few times during the review period I noticed the cache contained a corrupt version of a file. This was noticeable because of audible glitches during playback at the exact same time in the track and it was reproducible 100% of the time. In addition, I was able to clear the cache via a hidden advanced menu, forcing the N100H to refresh its cache of the problem file upon the next playback. Once this was done the file played back without a problem. I haven't seen anyone else experience this and I don't believe the Aurender team can reproduce the issue. The root cause may have something to do with my specific setup and / or use of the somewhat rare uncompressed FLAC files.

The build quality of the N100H is typical Aurender. Very solid and quality all around. The metal finish was blemish-free as was the AMOLED screen on the front panel.

Details: software

As previously mentioned, all Aurender servers are controlled by the same iOS application. The Aurender team currently has a version of the app working on and it's available in the Google Play store, but its marked as beta and doesn't have TIDAL integration. To demonstrate the iOS app and cover many of its features I created a 23 minute video (below). Thus, I will briefly mention that the Aurender app has one of the best TIDAL integrations

I've seen and certainly the best in its category. The iOS app enables mixed playlists containing both local (HDD/NAS) content and content streamed from TIDAL. It also pulls in some information about each artist and by doing this enables the app to hyperlink from an artist's bio toothed artists or albums mentioned in the bio. This is demonstrated in the video as well. One of my favorite new features is called Share With Friends. I love to share new music with my friends and I love to let some of them know when I rediscover a great album or track about which I forgot. It's a great way to elevate frequently solitary listening sessions to that of a controlled social interaction and shared experience. The way this feature works is via the standard press & hold Aurender pop up menu. Users can share nearly anything with friends such as a direct link to an artist page, track, or playlist whether it was created personally or by the TIDAL staff. After selecting the Share With Friends option on the pop up menu the iOS Mail app appears. This enables the user to add any desired comments or simply to press send. The user on the receiving side must open the email on an iOS device and click the enclosed link. The link will bring the user to the exact location within TIDAL that sending user elected to share. This only works with content available via TIDAL because it's nearly impossible to link to something in a users local library not knowing if the user has the specific material and how the metadata is or isn't organized. Lastly, I must mention the new HD album cover option available within the iOS app when used in combination with a 64 bit iPad. HD images, long overdue, really enhance the visual appeal of the iOS app and raise it to the level of many other apps for this specific feature.

In prior years when I've used the Aurender music servers and wanted to stream music directly from my NAS, it was possible but many of the great features of the Aurender app were missing for these network based files. For example, it was nearly impossible to search for music stored on a NAS, the metadata was missing, and finding music for playback had to be done by browsing the file structure of the NAS. This was unpleasant enough to rule it out for all by the most dedicated Aurender users. Seeing the need to match the user experience when pulling files from a NAS with that of playing files stored locally on the unit, the Aurender team created the Aurender Media Manager (AMM) application. Currently this app is only available for OS X, but a Windows version is due out very soon. According to the Aurender team they are perfecting the OS X version, rather than work on two versions simultaneously, and porting it to Windows will be a fairly painless process. AMM enables the user to select an Aurender, select either a NAS folder location or USB hard drive, and scan all the music located in one of those locations. When the scan is complete AMM transfers the newly created database to the Aurender. Running AMM on a full-blown computer has a big advantage over running such an application on the Aurender itself. That advantage is speed. Using my iMac 5K I was able to scan and send the database of 60,000+ tracks automatically to the N100H in less than 20 minutes. If this process were to run on the Aurender it would take much longer, possibly several hours. This speed comes in very handy when adding new music to one's library. There's no way I would wait several hours while a slow music server scanned my NAS before listening to a new download. With AMM the wait is very tolerable. This brings up the fact that AMM must be re-run every time one adds new music to the library. There is no way for the application to monitor a NAS location and automatically update the database on the Aurender. This monitoring type of feature would be very nice, but based on the relatively smallish size of most people's libraries, rescanning likely won't be a showstopper. If users want to listen to newly added music without rescanning their libraries, they can always browse through the folder structure within the iOS app for immediate access to this music.

Video Aurender ios app see: http://www.moremusic.nl/aurender/Aurender_Conductor.html

For Your Listening Pleasure

In order to hear exactly what the Aurender N100H had to offer, I connected it to my most transparent system configuration. This is a system that I'm intimately familiar with and one that I use almost every day. The N100H was connected via Wire World Platinum Starlight 7 USB cable to the Berkeley Audio Design Alpha USB, a converter with USB input and AES or S/PDIF (BNC) output. From the Alpha USB I ran a Wire World Platinum Starlight 7 AES cable to a Berkeley Audio Design Alpha DAC RS. I bypassed a preamplifier and ran balanced Wire World Platinum Eclipse 7 interconnects directly from the DAC into a pair of Pass Labs XA160.5 mono block amplifiers. The Pass amps were connected to TAD CR1 loudspeakers via Wire World Platinum Eclipse 7 speaker cables.

Dusty Springfield's Son of a Preacher Man at 24/192 had air around the snare drum and cymbals that was just fabulous. The horns emanating from the right speaker shift between harsh and smooth depending on the specific horn and the part of the track. All life-like in presentation, but in an old recording kind of way. The backing vocalists in the left channel were almost visible because of this wonderful audible illusion put forth by the entire system and sourced from the Aurender N100H.

Speaking of air and horns, listening to Harry James & His Big Band play The King James Version from Sheffield Labs was wonderful. Throughout the entire Corner Pocket track the air around the cymbals provides more than a hint at what the recording space must have been like that I think I could reconstruct it accurately in my mind while listening to the rest of the album.

Listening to Candle In The Wind (Acoustic at 24/96) from Elton John I couldn't stop concentrating on his vocals. Sure there is an acoustic guitar or two on the track and some backing vocalists, but this track is all about Elton's vocals. The sheen on his voice and the minor vocal modulations in tone heard throughout make the backing vocals pale in comparison. He's in the major leagues while the other vocalists are struggling in the minors. Through the Aurender N100H this recording intensely intimate with Elton singing directly to the listener from dead center between the loudspeakers.

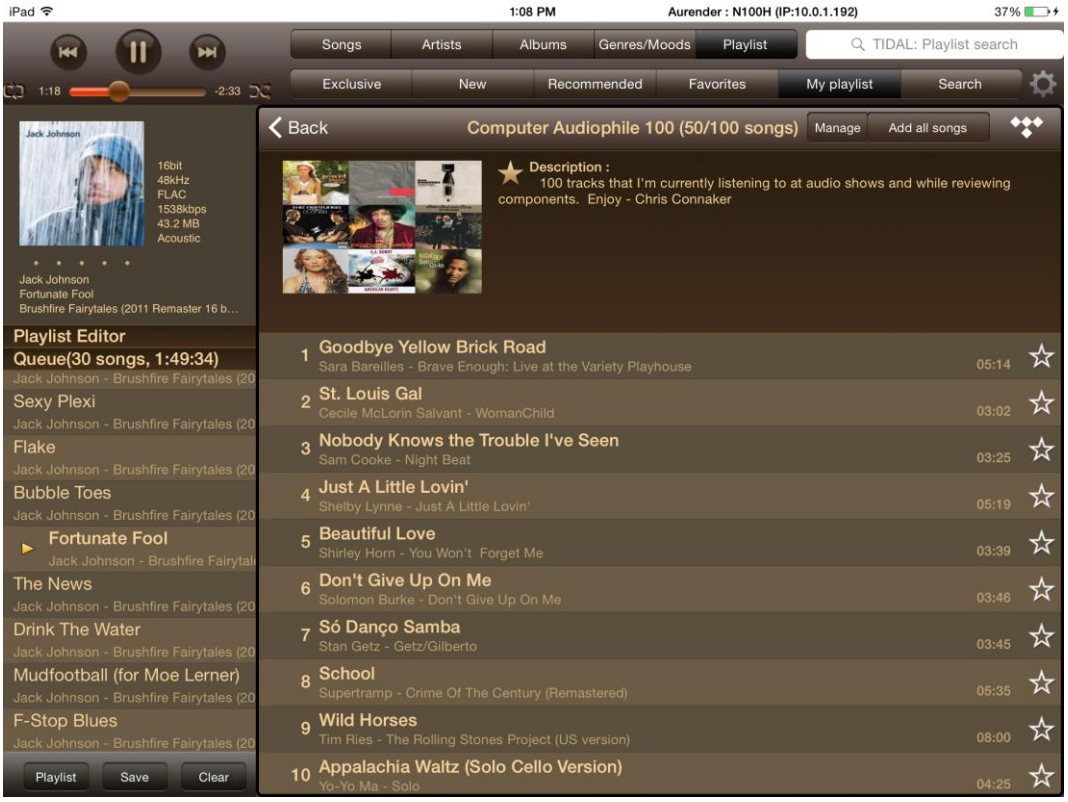
Listening to Supertramp's Rudy at 24/192 is almost always a treat. Through the N100H the experience was no exception. After the train recorded live at Paddington Station, the depth of the opening piano and a little later the softness of the cymbals in the left channel are just beautiful. When the bass guitar abruptly kicks in it's tight and as clear as ever. The smoothness and tone of the Saxophone that briefly enters the left channel near the 2:30 mark of the track is simply lush. Violin in the right channel starting at about 4:30 has palpable texture even though there are many other things going on in the track that could mask this soft detail. However, taken as a whole, the track is much greater than the sum of its parts. I must have listening to Rudy ten times during this review. The Aurender N100H really enabled all the magic in this track to come out and be heard at all volumes.

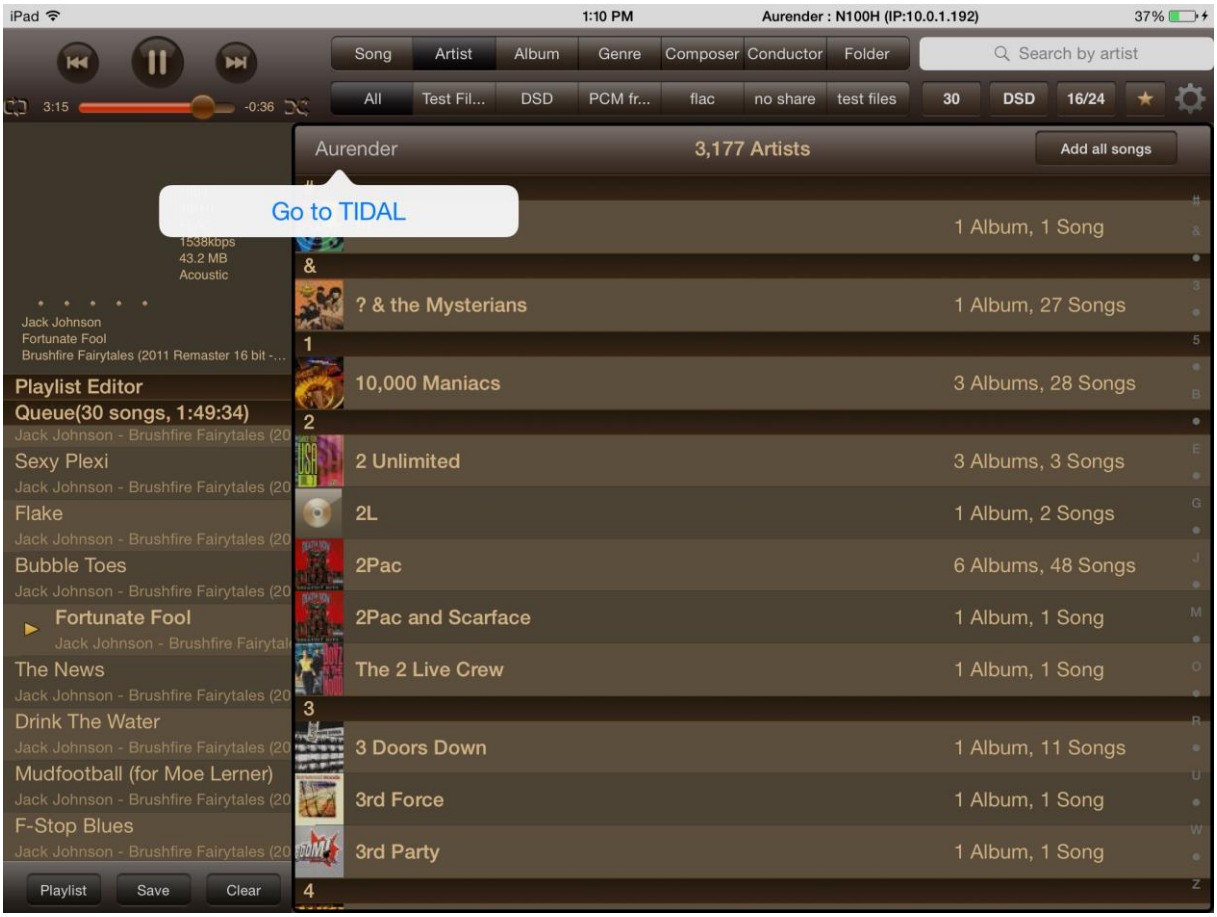
In 2001 Jack Johnson's debut album Brushfire Fairytales was remastered by Bernie Grundman from the original analog tapes. The remastered version was released at 16 bit / 48 kHz and is still available via Bandcamp. TIDAL has a 44.1 kHz version of this album labeled as a remaster, but the sound isn't even close to the 48 kHz version available via download. This entire album is terrific sending through the N100H / Wire World / Berkeley / Pass / TAD combination, but it won't hurt to discuss a few highlights. First, the opening bass on Middle Man is so organic and natural sounding and hearing Merlo Podlewski's fingers slide on the strings just sucks one into the music and recording studio. Second, the steel drum on the opening of Flake is so soft yet so seductive and makes the listener long for more. Third, Jack's vocals on The News are almost synesthesia inducing in that the sound is so palpable that one can almost see it. On this track Jack just hangs there between my TAD loudspeakers playing his acoustic guitar and singing. In addition to super sound, the lyrics of the track simply suck the listener into the story he tells with ease.

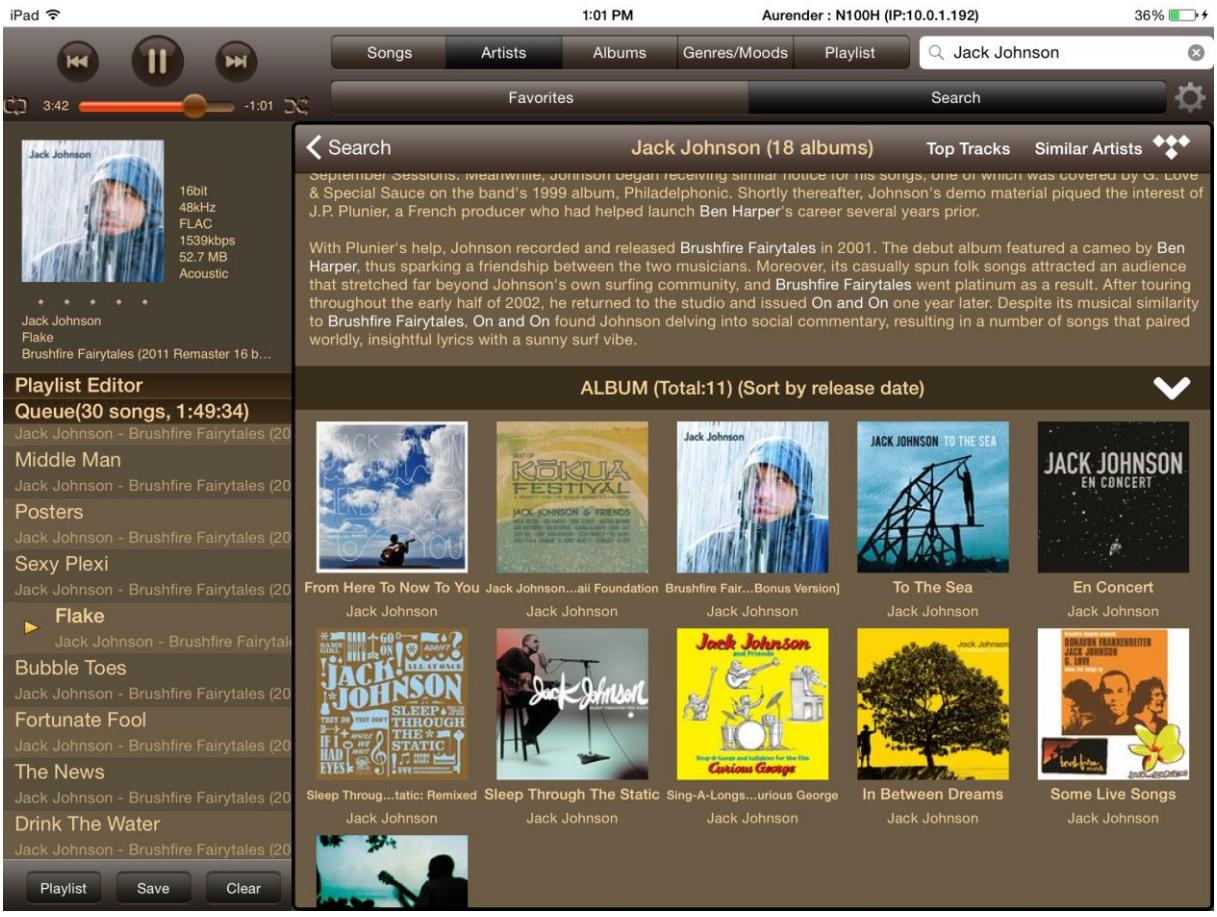
Conclusion

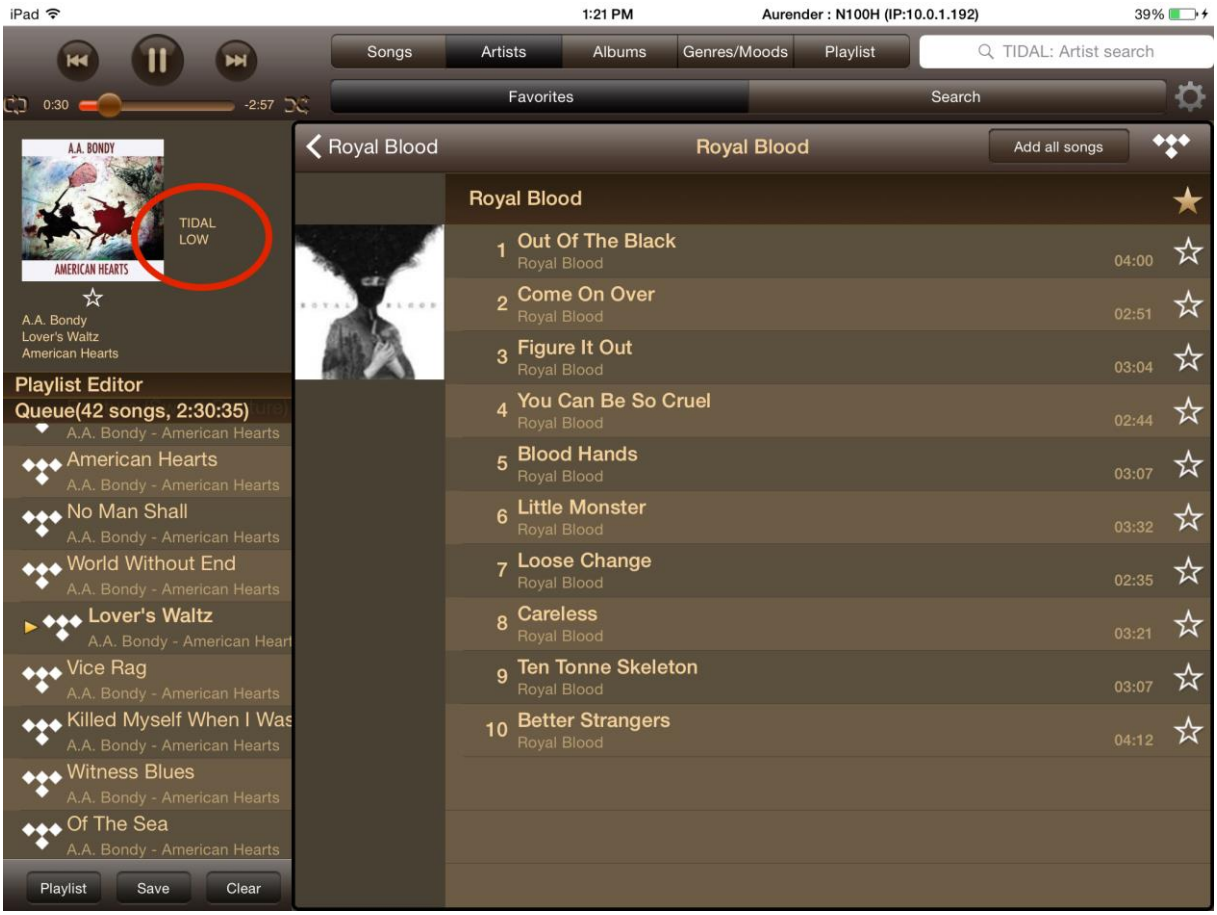
The Aurender N100H is a hybrid component capable of being a caching network player streaming from a NAS and / or a music server with local storage. Add in the fact that it can stream lossless music from TIDAL's vast library, music lovers shouldn't run out of options with the N100H. At just $200 more than the standard N100, upgrading to the H model seems like a no brainer for most consumers. The 2TB of storage is either very useful now, or may become useful depending on one's circumstances in the future. Upgrades to the iOS application, since I previously reviewed an Aurender server, have only served to increase the value proposition of the Aurender line of products. The Aurender team continuously has its finger on the pulse of user communities and has quickly and excellently introduced such features as a leading integration with TIDAL and, a personal favorite, sharing with friends feature. Opening up my listening room (virtually) by sharing music with friends around the world has tremendous power to turn a solitary activity into a joint experience. The N100H's linear power supply and low noise custom USB audio output no doubt contribute greatly to its superb sound quality. Throughout this review process I enjoyed all my music. I wasn't stuck listening to only the recordings made for high end audio demonstrations. All my music sounded like it should. There is no turning the Red Hot Chili Peppers' Californication into a sonic gem, but through the Aurender the music was as enjoyable as ever. Overall the Aurender N100H succeeds in transporting the listener to another time and place through its terrific ability

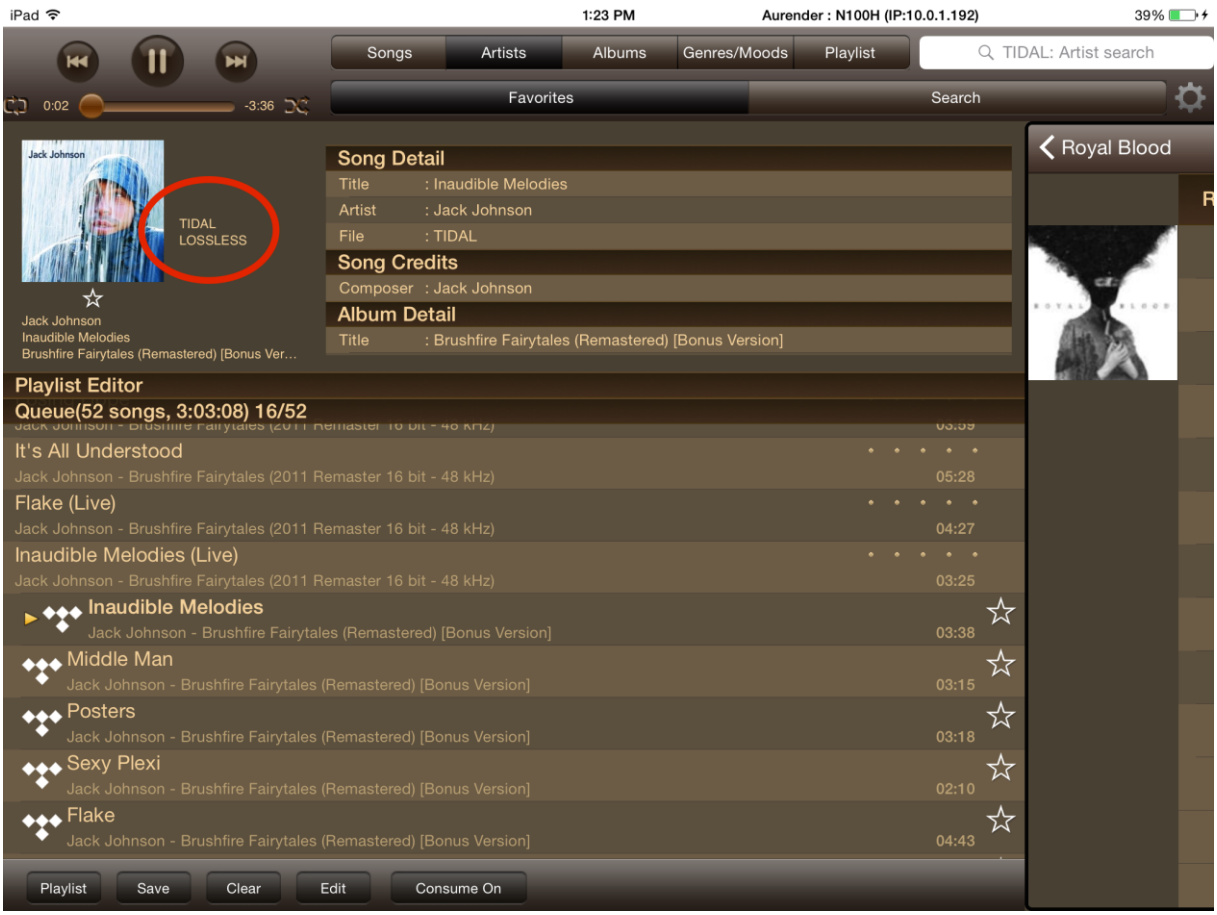
to reproduce audible illusions. The N100H is a great next step for those looking to move from a traditional computer based source to a more complete system approach that continues to improve without the need for user intervention. Let the Aurender team do the work while you do the listening.




iPad
1:10 PM
Aurender : N100H (IP:10.0.1.192)
37%
Song
Artist
Album
Genre
Composer
Conductor
Folder
Search by artist
All
Test Fil...
DSD
PCM fr...
flac
no share
test files
30
DSD
16/24
3:15
-0:36
Aurender
3,177 Artists
Add all songs
Go to TIDAL
1538kbps
43.2 MB
Acoustic
Jack Johnson
Fortunate Fool
Brushfire Fairytales (2011 Remaster 16 bit -...
Playlist Editor
Queue(30 songs, 1:49:34)
Sexy Plexi
Flake
Bubble Toes
Fortunate Fool
The News
Drink The Water
Mudfootball (for Moe Lerner)
F-Stop Blues
Playlist
Save
Clear
1 Album, 1 Song
? & the Mysterians
1 Album, 27 Songs
10,000 Maniacs
3 Albums, 28 Songs
2 Unlimited
3 Albums, 3 Songs
2L
1 Album, 2 Songs
2Pac
6 Albums, 48 Songs
2Pac and Scarface
1 Album, 1 Song
The 2 Live Crew
1 Album, 1 Song
3 Doors Down
1 Album, 11 Songs
3rd Force
1 Album, 1 Song
3rd Party
1 Album, 1 Song


iPad
1:01 PM
Aurender : N100H (IP:10.0.1.192)
36%
Songs
Artists
Albums
Genres/Moods
Playlist
Jack Johnson
Favorites
Search
3:42
-1:01
Search
Jack Johnson (18 albums)
Top Tracks
Similar Artists
16bit
48kHz
FLAC
1539kbps
52.7 MB
Acoustic
Jack Johnson
Flake
Brushfire Fairytales (2011 Remaster 16 b...
Playlist Editor
Queue(30 songs, 1:49:34)
Middle Man
Posters
Sexy Plexi
Flake
Bubble Toes
Fortunate Fool
The News
Drink The Water
Playlist
Save
Clear
& Special Sauce on the band's 1999 album, Philadelphonic. Shortly thereafter, Johnson's demo material piqued the interest of J.P. Plunier, a French producer who had helped launch Ben Harper's career several years prior.
With Plunier's help, Johnson recorded and released Brushfire Fairytales in 2001. The debut album featured a cameo by Ben Harper, thus sparking a friendship between the two musicians. Moreover, its casually spun folk songs attracted an audience that stretched far beyond Johnson's own surfing community, and Brushfire Fairytales went platinum as a result. After touring throughout the early half of 2002, he returned to the studio and issued On and On one year later. Despite its musical similarity to Brushfire Fairytales, On and On found Johnson delving into social commentary, resulting in a number of songs that paired worldly, insightful lyrics with a sunny surf vibe.
ALBUM (Total:11) (Sort by release date)
From Here To Now To You
Jack Johnson
Jack Johnson...aii Foundation
Jack Johnson
Brushfire Fair...Bonus Version]
Jack Johnson
To The Sea
Jack Johnson
En Concert
Jack Johnson
Sleep Throug...tatic: Remixed
Jack Johnson
Sleep Through The Static
Jack Johnson
Sing-A-Longs...urious George
Jack Johnson
In Between Dreams
Jack Johnson
Some Live Songs
Jack Johnson


iPad
1:21 PM
Aurender : N100H (IP:10.0.1.192)
39%
Songs
Artists
Albums
Genres/Moods
Playlist
TIDAL: Artist search
Favorites
Search
0:30
-2:57
A.A. BONDY
AMERICAN HEARTS
TIDAL
LOW
A.A. Bondy
Lover's Waltz
American Hearts
Playlist Editor
Queue(42 songs, 2:30:35)
A.A. Bondy - American Hearts
American Hearts
A.A. Bondy - American Hearts
No Man Shall
A.A. Bondy - American Hearts
World Without End
A.A. Bondy - American Hearts
Lover's Waltz
A.A. Bondy - American Heart
Vice Rag
A.A. Bondy - American Hearts
Killed Myself When I Was
A.A. Bondy - American Hearts
Witness Blues
A.A. Bondy - American Hearts
Of The Sea
A.A. Bondy - American Hearts
Playlist
Save
Clear
Royal Blood
Royal Blood
Add all songs
Royal Blood
1 Out Of The Black
Royal Blood
04:00
2 Come On Over
Royal Blood
02:51
3 Figure It Out
Royal Blood
03:04
4 You Can Be So Cruel
Royal Blood
02:44
5 Blood Hands
Royal Blood
03:07
6 Little Monster
Royal Blood
03:32
7 Loose Change
Royal Blood
02:35
8 Careless
Royal Blood
03:21
9 Ten Tonne Skeleton
Royal Blood
03:07
10 Better Strangers
Royal Blood
04:12


iPad
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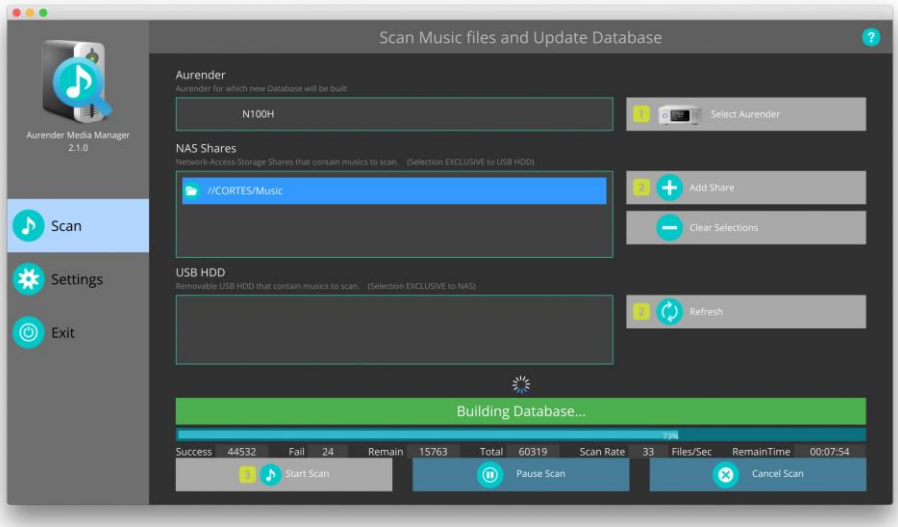
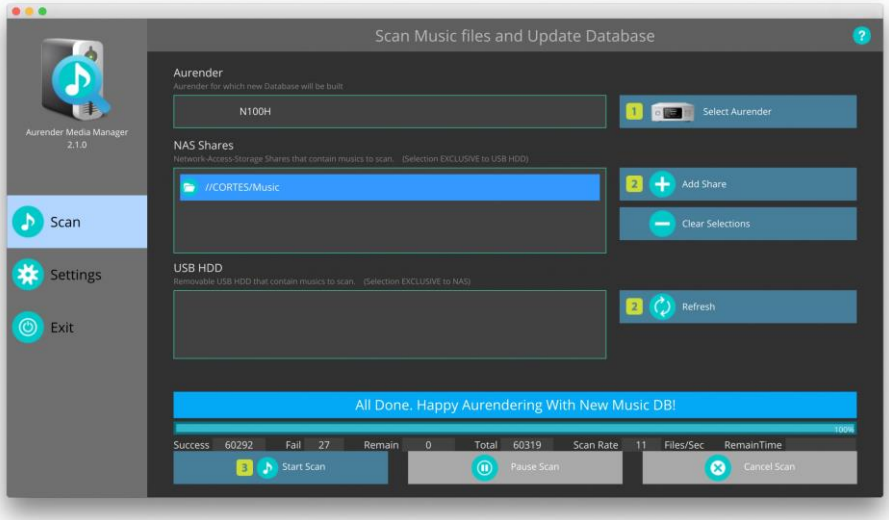
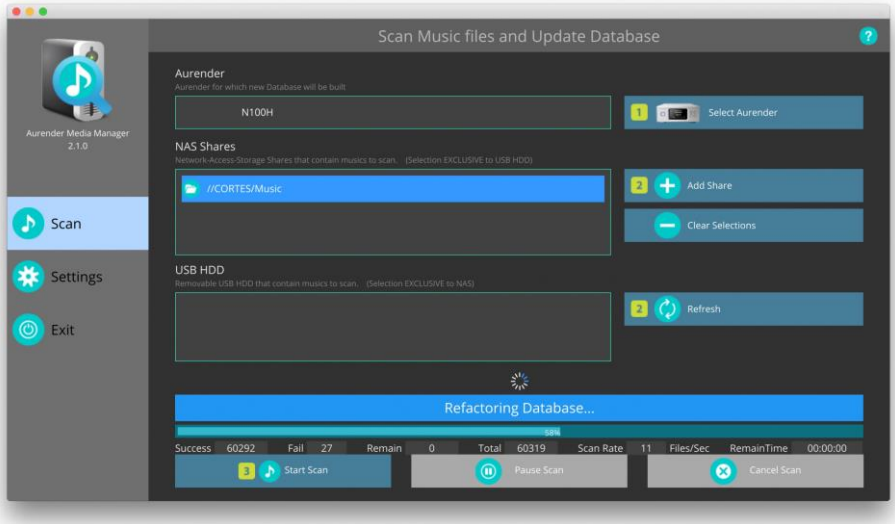
Aurender : N100H (IP:10.0.1.192)
39%
Songs
Artists
Albums
Genres/Moods
Playlist
TIDAL: Artist search
Favorites
Search
0:02
-3:36
Jack Johnson
TIDAL
LOSSLESS
Jack Johnson
Inaudible Melodies
Brushfire Fairytales (Remastered) [Bonus Ver...
Song Detail
Title : Inaudible Melodies
Artist : Jack Johnson
File : TIDAL
Song Credits
Composer : Jack Johnson
Album Detail
Title : Brushfire Fairytales (Remastered) [Bonus Version]
Playlist Editor
Queue(52 songs, 3:03:08) 16/52
It's All Understood
Jack Johnson - Brushfire Fairytales (2011 Remaster 16 bit - 48 kHz)
05:28
Flake (Live)
Jack Johnson - Brushfire Fairytales (2011 Remaster 16 bit - 48 kHz)
04:27
Inaudible Melodies (Live)
Jack Johnson - Brushfire Fairytales (2011 Remaster 16 bit - 48 kHz)
03:25
Inaudible Melodies
Jack Johnson - Brushfire Fairytales (Remastered) [Bonus Version]
03:38
Middle Man
Jack Johnson - Brushfire Fairytales (Remastered) [Bonus Version]
03:15
Posters
Jack Johnson - Brushfire Fairytales (Remastered) [Bonus Version]
03:18
Sexy Plexi
Jack Johnson - Brushfire Fairytales (Remastered) [Bonus Version]
02:10
Flake
Jack Johnson - Brushfire Fairytales (Remastered) [Bonus Version]
04:43
Playlist
Save
Clear
Edit
Consume On
Royal Blood


Scan Music files and Update Database
Aurender Media Manager
2.1.0
Scan
Settings
Exit
Aurender
Aurender for which new Database will be built
N100H
1 Select Aurender
NAS Shares
Network-Access-Storage Shares that contain musics to scan. (Selection EXCLUSIVE to USB HDD)
//CORTES/Music
2 Add Share
Clear Selections
USB HDD
Removable USB HDD that contain musics to scan. (Selection EXCLUSIVE to NAS)
2 Refresh
Building Database...
73%
Success 44532 Fail 24 Remain 15763 Total 60319 Scan Rate 33 Files/Sec RemainTime 00:07:54
3 Start Scan
Pause Scan
Cancel Scan


Scan Music files and Update Database
Aurender Media Manager
2.1.0
Scan
Settings
Exit
Aurender
Aurender for which new Database will be built
N100H
1 Select Aurender
NAS Shares
Network-Access-Storage Shares that contain musics to scan. (Selection EXCLUSIVE to USB HDD)
//CORTES/Music
2 Add Share
Clear Selections
USB HDD
Removable USB HDD that contain musics to scan. (Selection EXCLUSIVE to NAS)
2 Refresh
All Done. Happy Aurendering With New Music DB!
100%
Success 60292 Fail 27 Remain 0 Total 60319 Scan Rate 11 Files/Sec RemainTime
3 Start Scan
Pause Scan
Cancel Scan


Scan Music files and Update Database
Aurender Media Manager
2.1.0
Scan
Settings
Exit
Aurender
Aurender for which new Database will be built
N100H
1 Select Aurender
NAS Shares
Network-Access-Storage Shares that contain musics to scan. (Selection EXCLUSIVE to USB HDD)
//CORTES/Music
2 Add Share
Clear Selections
USB HDD
Removable USB HDD that contain musics to scan. (Selection EXCLUSIVE to NAS)
2 Refresh
Refactoring Database...
58%
Success 60292 Fail 27 Remain 0 Total 60319 Scan Rate 11 Files/Sec RemainTime 00:00:00
3 Start Scan
Pause Scan
Cancel Scan