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Aurender W20SE Music Server

Gilding the Lilly

Equipment Report by Robert Harley

I 've used Aurender's W20 music server as my reference since reviewing it in Issue 258. I chose the W20 for its combination of outstanding sound quality, features, and its superb music-management app. The W20 has been at the front of my system throughout many different changes in amplifiers, cables, loudspeakers, and even rooms, but during that time I've never had occasion to question its performance or wish for something "better." That's a remarkable statement in the rapidly advancing world of digital audio, particularly in music servers. But the Korean company has been quietly working behind the scenes to make its flagship platform even better. The result is the new W20 Special Edition, a major overhaul of the original W20. The "Special Edition" moniker is a bit misleading—the W20SE isn't a higher-end option over the standard W20. Rather, the W20 has been discontinued and replaced by the W20SE, with a price increase from $17,600 to $22,000. Before looking at what's new in the SE, let's recap the original W20. Aurender's top music server is a network-based system that stores music on its internal hard-disk drives and streams music from Tidal, Qobuz, and Spotify (in addition to Internet Radio). You simply connect the W20 to your network, run a digital cable from the W20's output to your DAC, and manage playback (streaming or stored music library) via Aurender's Conductor app on your tablet. The original W20 is a full-size chassis containing a computer built from the ground up specifically for audio, two 6TB hard disk drives, 240GB of cache memory, and a digital-audio output clocking circuit. The cache memory buffers the signal so that the now have "double isolation" to prevent noise from entering the W20SE. In addition to these hardware upgrades, the W20SE also sports new features, including support for native DSD output up to DSD512. DSD-over-PCM (DoP) supports up to

DSD128 (the W20 was limited to DSD64). The DoP format structures the DSD data so that it looks like PCM to the hardware it encounters. The datastream is converted back to DSD at the receiving end, with no loss of information. The core idea of DoP was invented by dCS in 2011 and developed into an open standard by a group of audio companies including Aesthetix, Merging Technologies, J. River, Vitus, MSB, and others. An entirely new feature in the W20SE is PCM upsampling from 44.1kHz or 48kHz to two times, four times, or eight times the original frequency (88.2kHz/96kHz, 176.4kHz/192kHz, and 352.8/384kHz). Why pairs of sampling frequencies so close together? So that the upsampled frequency is an integer multiple of the base frequency. Such integer-multiple upsampling is easier to realize and sounds much better than non-integer upsampling. The highest output frequencies of 352.8kHz and 384kHz require dual-wire connection to a dual-wire-capable DAC. The upsampling works only on the AES/EBU, TosLink, and SPDIF outputs, not on the USB output—the upsampling is performed by hardware via a field-programable gate array, not in software by the CPU, and the FPGA doesn't feed the USB output. Aurender believes that software-based digital signal processing degrades the signal. The W20SE will also convert DSD to PCM with user-selectable PCM output sampling frequencies of 88.2kHz, 176.4kHz,or 352.8kHz. You can also select the DSD low-pass filter frequency (24kHz, 30kHz, 40kHz, or 50kHz). This DSD-to-PCM conversion is useful because many DACs support DSD only on their USB inputs. The DSD-to-PCM conversion isn't performed in software by the CPU, but rather by a field-programmable gate array using thousands of filter taps. Aurender maintains that their FPGA approach sounds better than software-based DSD-to-PCM conversion. MQA Core decoding is now standard rather than an added-cost option. MQA Core decoding "unfolds" the MQA signal to either 88.2kHz or 96kHz sample rate for decoding by your non-MQA DAC. This approach isn't as good as feeding a DAC that has full MQA decoding, but is a significant improvement over sending 44.1kHz to your non-MQA DAC. Of course, if you have an MQA-compatible DAC the W20SE will pass the MQA signal to the DAC for full MQA decoding. Overall, the updates to the W20SE are significant. But it speaks volumes about the rightness of the original W20's fundamental design that this new flagship is based on the same technologies and architecture.

Listening

It was easy to identify the sonic differences between the W20 and W20SE; I had both in my rack at the same time and was able to make direct comparisons. Moreover, I was so familiar with the sound of the system with the W20 that the improvements in the SE were readily apparent. First, the W20SE is smoother than the W20, with greater timbral liquidity and ease. The SE's treble is more refined and better integrated into the music's fabric. By comparison the original W20 had a hint of sibilance on Nora

immediate, not in a forward-sounding way but rather by virtue of the greater tangibility of instrumental images. I also heard a warmer, richer, and more densely colored bass. The tonal balance is identical to that of the original W20, but the SE has greater definition, body, and textural complexity. The bottom-end definition was readily apparent on Anthony Jackson's innovative bass work on the Steve Khan album Eyewitness. To assess the upsampling option I had to use the W20SE's AES/EBU output rather than my usual connection of running USB from the Aurender to a Berkeley Alpha USB. This small outboard box takes in USB and outputs SPDIF or AES/EBU, reclocking the signal and isolating the DAC from any noise. The Berkeley Alpha DAC Reference Series 3, my reference DAC, lacks a USB input. I've found that this setup delivers the best performance, but does require an additional digital cable and a power cord, not to mention the box itself and its $2k price tag. But upsampling 44.1kHz files to 176.4kHz produced startling improvements across the board in resolution, clarity, and transient performance. The first 44.1kHz file I upsampled was from a CD I had ripped of the band African Guitar Summit. The layers of intricate percussion were far better resolved when upsampled, with each instrument sounding more realistic in timbre and in the sense of existing independently in space. Upsampling better resolved the body of the percussion instruments, giving each one a richer and more nuanced tonality. The soundstage moved forward slightly (I accounted for the precise level difference when upsampling is engaged, with 0.1dB precision), but not in a forced way. Overall, there was a greater sense of musical coherence in the way the complex rhythmic layers were woven together. On a direct-to-two-track recording I made of a jazz quintet recorded at 44.1kHz (the highest resolution available in 1988), upsampling brought out the life and air in the top octaves. Conti Condoli's flugelhorn had greater textural liquidity, more like burnished brass with less metallic sheen. By comparison, no upsampling sounded thick and veiled. Buddy Guy's acoustic guitar in the great track "Done Got Old" from his groundbreaking album Sweet Tea became more vivid, present, and alive. These impressions were consistent over a wide range of recordings. The upsampling feature is in my view the most important improvement offered by the W20SE. After hearing standard-res files upsampled, you won't want to go back.

Conclusion

The Aurender W20SE is a significant advance over what was already a reference-quality music server. It's not only better sounding, but much more capable in its handling of DSD. Most important, PCM upsampling vaults the SE's performance into another league. This feature alone is, in my view, worth the price of the upgrade from the W20. As I wrote in my original review, Aurender's Conductor app is outstanding. A music server's music-management app is a vital part of the product; it's the interface between you and your music and makes the difference between constant frustration and delighted satisfaction.

Specifications

- Storage capacity: 4TB SSD.
- Integral streaming: Tidal, Qobuz (subscription required);Internet Radio.
- Formats supported: DSD up to DSD512 (DSF, DFF), WAV, FLAC, AIFF, ALAC, M4A, APE, and others.
- Outputs: AES/EBU (x2, single-wire or dual-wire mode), USB 2.0 (dedicated audio output), USB data ports (x2), TosLink optical, Ethernet, coaxial (RCA), coaxial (BNC).
- Inputs: Clock on BNC.
- Network: Ethernet.
- Dimensions: 16.93" x 4.17" x 14.57".
- Weight: 46.5 lbs.