Subject: Re: Unexpected upgrade
Posted by Wayne Parham on Mon, 09 Sep 2024 15:44:26 GMT
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Dude, that's awesome!

As an aside, when I find digital source hardware that improves from something like this, I always suspect a ground loop is or was the cause. Where there is no DAC change or anything else that is substantive - just a power supply or cabinet change, something like that - I always suspect the ground connection did it.

I think we sometimes forget about that as we've moved into the digital realm. It was more obvious in the analog world - a ground loop almost always presented as noise at power supply frequencies. Either hum from the fundamental or spikes from diode switching at those frequencies, making a harsher form but still at 60Hz or 120Hz, depending on half-wave or full wave rectified. Ground loops in car setups usually present as alternator noise. In each of those cases, the symptoms were familiar.

In the digital realm, sometimes ground loops make a sort of grungy or hashy "background," just like you've described. I see this not only in audio but also in control systems, where you won't hear the noise but can see it with a scope. The symptoms there are usually intermittent failures, usually in sensing, communications or control. When I see those symptoms, I almost always find a ground loop that shows digital noise reflected into a sensor input or communication interface. Sometimes, I'll see it go the other way, with a high-current control signal reflected back into the digital circuits, resetting them or otherwise causing mayhem.

Having digital in our audio world has made life much more convenient and quality can be great. But the connection between digital and analog can sometimes be tricky. I tend to prefer isolation - like through opto-isolators - because those remove the problem. It's not unlike using an isolation transformer for the same reason, usually done in purely-analog circuits where long signal lines are required making ground loops more likely.