

# AS WE SEE IT

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THIS ISSUE: Hi-fi and networking in the century of streaming.

## No server is an island.

*No hi-fi is an island entire of itself; every component is a piece of the system, a part of the mains.*  
—JOHN DONNE, FROM *THE COMPLEAT AUDIOPHILE*, 1623

**A**round the time I took over as *Stereophile's* editor, I bought a Peloton, the internet-enabled stationary exercise bike. It was a lifesaver during the pandemic, when gyms were closed; despite the poor audio quality and the awful music many of the instructors choose, it's good, diverting exercise.

I quickly learned I'd be wanting Bluetooth headphones, since dangling wires get in the way. The Peloton, though, can be finicky about Bluetooth connections, and I can be finicky about sound, so I went through half a dozen choices before I settled on one that gave me good-enough sound and also connected consistently. I'd love to recommend some obscure high-end brand, but, while I tried several, none of the obscure ones established a Bluetooth connection with the Peloton bike with sufficient dependability, and none of them sounded as good as I had hoped. I ended up with Apple AirPods Pro. They're good enough for Peloton's inherently crappy sonics, and they connect reliably.

A few days ago, though, I climbed on my bike, started up a class—and found that the volume was much too low, even when I set it at maximum. I've never found the AirPods Pro *quite* loud enough, but now I had to strain to hear them. I continued with my ride to nowhere, and I set a new personal best for a 45-minute ride. Woo, hoo!

A couple of days later, as I prepared for my next ride, I set about troubleshooting the volume issue—but who you gonna call? Apple or Peloton? The AirPods still worked fine with all my Apple devices, so I contacted Peloton's technical support. They walked me through some obvious troubleshooting steps and a few not-so-obvious ones. Nothing worked, and then it was time for dinner. I'd missed my ride.

It turned out that neither the AirPods nor the Peloton were entirely at fault. A Bluetooth connection, like any kind of networking connection, is the result of a *negotiation*. The two devices talk and come to an agreement, and parameters are set—including, apparently, the maximum volume of the Bluetooth 'phones. In an all-Apple ecosystem, this usually goes well, but the Peloton is an Android-based device. That complicates things.

Also complicating things was a third party I didn't realize was involved—a third "voice" in the room, and maybe a fourth. My AirPods were still chatting with my iPhone, and possibly also with my laptop, which caused negotiations to hit an impasse. When I silenced the other voices (by disconnecting the AirPods from those other devices), the AirPods reached a suitable

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agreement with the Peloton. A quick reset, and all was well.

Bluetooth ain't hi-fi (although it might be soon), and neither is Peloton. So what's the relevance? In a traditional audio system, the fault for a failure may lie with the amplifier, the preamp, the source, the speakers, or a cable—but when something is wrong, *something* is at fault—some *particular* thing. With a little patience, you can isolate the problem and assign blame. But when a network is involved, responsibility is diffuse and often shared. If you've ever managed a project, you know what a headache diffuse responsibility can be.

Many of us are handy. If we have a plumbing or electrical problem, we can usually fix it ourselves. Some of us can even repair our own amplifiers. With networks, though, few of us take that approach. Instead, we visit Amazon.com (if our internet service is still working) or Best Buy (if it isn't) and buy a new router. Manufacturers of home networking equipment want us to think that buying something is the answer to our problems. (Sound familiar?) And in fact, that new box *does* appear to solve the problem, or seems to. Consumer devices are made to be fault tolerant. Even so, unless you're a networking engineer with the right diagnostic equipment, there's no way to be sure that your network is working optimally. That sets the stage for errors that

are hard to trace.

Even networks that seem to be working well can fail without notice. The various parts stop talking to each other when the software (or "firmware") that runs routers, extenders, servers, and networked DACs is updated, with or without our knowledge. A *failure* to update can also cause problems. The worst is when the updates stop completely—when companies "brick" a piece of equipment by abandoning support after several years. (Brother just did that to my otherwise perfectly good laser printer.) Some servers run software made by a different company, like Roon. If my server runs Roon but is made by Acme Server Co., who do I blame when something goes wrong?

I feel sorry for companies that make networked servers—first, because few hi-fi companies have deep knowledge of networking and software, which makes designing and servicing these products difficult, and second because, while networking has changed the nature of our problems, attitudes *haven't* changed: *I paid good money for that server, so it damn well better work; don't you go tellin' me it's my network's fault.*

To their credit, many companies that make internet-capable music components accept the challenge of troubleshooting customers' home networks. How could they do otherwise? "Not our fault" isn't a popular response, even when it's true.

This shift from clearcut blame to negotiation is a sea-change, not just in hi-fi but in the wider world. Apologies to John Donne for appropriating and distorting his Commentary in the epigraph above, but he won't care; he's dead. Instead, I'll end with some suggestions.

Keep your home network simple: Anything not essential is likely to introduce errors. Use wired connections for servers, networked DACs, and so on, since Wi-Fi is inherently flakey. Consider hiring a network engineer to optimize your home network.

And when something goes wrong, don't assume the fault lies with the server, even if your email and Netflix are working fine. It could be that what you've got there is a failure to communicate. ■