

JASON VICTOR SERINUS

Nordost QNet and QSource

NETWORK SWITCH AND LINEAR POWER SUPPLY

“A switch? Why do I need a switch?” That was my response to Meredith Gabor, head of marketing and PR for cable and accessories manufacturer Nordost, after she dropped the news. She had just arranged with Jim Austin for me to write a shorter, “ancillary” review of the new Nordost QNet Network Switch¹ (\$3199.99) with its optional QSource linear power supply² (\$2749.99) and premium QSource DC umbilical interface cables (\$339.99 for 1m). Why did I need an expensive QNet switch when my router was functioning reliably? Good question.

Checking Nordost’s website, I discovered that the QNet is “a layer-2 Ethernet switch”—all Ethernet switches are layer-2 devices—“with five ports designed from the ground up with high-end audio performance and an extremely low noise operation in mind. ... Most audiophile switches on the market take an existing consumer-level switch and improve parts of it, typically the power supply and the clock. While this approach certainly produces an improved performance, it doesn’t come close to the results achieved by a design conceived from the drawing board to transmit and receive high speed signals.”

This claim seemed plausible, at least in the abstract. Everything in a system matters. Sometimes improvements are “large,” as in upgrading to a new DAC, server, amplifier, or speaker. Sometimes they’re “small,” as when a rack, cable, power product, or footer is replaced. I’ve put “large” and “small” in quotes because even small changes can have outsized importance in the impact the music makes. The cumulative sum of small incre-



With more silence came more beauty and detail—and with it, more light and spiritual insight.

mental improvements can raise system performance from good or very good to great. What’s more, occasionally a “small” change can cause a system to suddenly snap into focus; so, paradoxically, even a small change can be large.

But—as I talked to Gabor, I did have “buts.” I doubted the QNet would make a difference in my unusually complicated Ethernet network, which converted Ethernet to optical and back again using

1 See nordost.com/qrt/qnet-network-switch.php.

2 See nordost.com/qrt/qsource-linear-power-supply.php.

SPECIFICATIONS

Description QNet: Unmanned Ethernet switch with five Ethernet ports with 8P8C (RJ45) connectors. Ports 1-3 are 1000BASE-T/100BASE-TX-capable with autonegotiation and auto-MIDI/MID-X support. Ports 4 and 5 are 100BASE-TX full duplex only. DC input: LEMO, 9V/1.2A. QSource: Linear power supply. Input: 15A IEC, switchable 110/220VAC 50/60Hz. Outputs: Two variable, four 5V fixed, Variable

output “A” switches between 9, 12, and 19V, with 9V intended for the QNet. Variable output “B” switches between 12, 19, and 24V. Output power: 9V output: 10W; 12V outputs: 20W; 19/24V output: 66W. All 5V outputs combined output of 5W. PSRR (power supply rejection ratio): 75dB. QSource DC cables: Micro monofilament design, shielded twisted pairs with fluorinated ethylene propylene (FEP) insulation and

solid-core silver-plated, oxygen-free copper conductors, 2 × 22 AWG for regular, 2 × 18 AWG for premium.

Dimensions QNet: 6.5" (165mm) Diameter × 1.35" (34.25 mm) H. Weight: 31oz (880gm). QSource: 11" (280mm) L × 4.75" (121mm) D × 2.625" (67mm) H. Weight: 6lb (2.7kg).

Finish Matte black aluminum (QNet), matte black and natural brushed aluminum (QSource).

Serial numbers of units

reviewed 6000026 (QNet), 4159142 (QSource). Manufactured in the US.

Price \$3199.99 (QNet), \$2749.99 (QSource). Approximate number of US dealers: 98. Warranty: 24 months to original purchaser only.

Manufacturer Nordost Corporation, 93 Bartzak Dr., Holliston, MA 01746. USA. Tel: (800) 836-2750. Web: nordost.com.

three Small Green Computer/Sonore Optical Modules and an Uptone Audio EtherRegen. They, the router, Roon Nucleus+, and more all received power from HDPLEX 300 four-device linear power supplies (\$685/each). Gabor replied that I'd simply plug all those devices into the QNet Ethernet switch.

She also said that while the QNet would sound "really good" with its supplied switch-mode wall wart, it would sound even better with an optional QSource linear power supply (LPS).

The QSource, I soon learned, has four outputs fixed at 5V and two that are adjustable. Output A switches between 9V, 12V, or 19V; 9V is intended for the QNet. Output B switches between 12V, 19V, and 24V; 19V is appropriate for Roon Nucleus and Nucleus+ music servers. The QSource's fixed 5V outputs, which can provide very little power, are intended for Nordost QPoint Resonance Synchronizers,³ which I don't have. Those outputs can't handle 5V devices that demand significant current.⁴

Gabor said that the QSource sounds best with its premium QSource umbilical LEMO interface cables, which cost far more than the aftermarket Ghent Audio Canare umbilical interface cables I use with the HDPLEX 300. She was also certain that the QSource would produce better sound from the Roon Nucleus+ than the HDPLEX 300 does—a bold statement from someone who, I'm guessing, has never heard the effects of an HDPLEX 300.

Time to ponder. My music room router was a basic Linksys, which, when I bought it, cost \$39.99. Undoubtedly, its Ethernet ports were sourced and assembled as cheaply as possible. It seemed reasonable that better conductive materials and superior noise isolation might create a better-sounding network interface. How much that would matter, I had no idea. Only by listening would I discover if the QNet and QSource made a difference significant enough to justify their cost.

More details

The QNet has five numbered Ethernet ports. Ports 1–3 are auto-negotiated 1000BASE-T (1Gbps) ports designed for routers and other "generic network devices." Ports 4 and 5 are fixed, 100BASE-TX (100Mbps) "audio" ports for audio servers, players, and external media sources.⁵

The QNet runs comfortably warm to the touch. Its innards are illuminated with a soft, pleasing blue light that's only visible at certain angles. The QSource runs quite hot. It's quite easy to accidentally flip one of the switches, which are located on the QSource's bottom side; I did it when I placed a Wilson Pedestal under it and then pushed the QSource around. I was lucky—I didn't break anything—but it would be easy to accidentally send a component too high a voltage. If your QNet gets as hot as the QSource, disconnect immediately and check the switch.



When I disconnected the Roon Nucleus+ server/streamer from the HDPLEX 300 and powered it, as well, by the QSource, I heard even more color, detail, and clarity.

Electrical engineer Dennis Bonotto, senior R&D engineer and international sales rep at Nordost, supplied more information. Bonotto played a key role in the engineering team that designed the QNet/QSource. "97–98% of the audiophile switches on the market are mods of less noble switches, if you will," he said. "Their different ports share some circuitry, terminations, and grounds, with soldering across and between the ports. Everything that happens on one port is heard by the other ports. Some mount their oscillator clock on a daughter board and then run a cable between them. It may be better than the switch you buy at Wal-Mart, but it kinda defeats the point.

"Our main goal was to make the QNet as transparent and 'not there' as possible. ... We really believe that by reducing or minimizing the noise that is added into every single process that happens between signal entrance and exit—by tackling every single source of noise that might affect the signal going through the QNet—we can make a better, more silent device.

"We took really good care to create five completely independent circuits, one for each physically separated port. The shielding material on the ports is one piece folded; it's not really soldered or joined. The shield on each RJ45 is independently soldered to the board; then they connect



3 See nordost.com/qrt/qpoint-resonance-synchronizer.php.

4 According to the specifications, the maximum power output of all four 5V outputs combined is 5W.

5 As I soon learned, the Roon Nucleus+ server/streamer functions best with the faster ports. With 100Mbps, if Qobuz even played, it kept timing out and jumping from track to track.



to a common ground plane. On our boards, the traces are separated and built to very high precision. The width of every trace, the distance between them, and the distance to the underlying layer was calculated to minimize noise and reflections.

“There are six linear power supplies within the QNet that feed the IC-switch engine. There are also several other parts of the intelligent circuit that need power. Every little voltage and current that the system demands is supplied by an independent power supply.

“Apart from the connection between the power input and the PCB, there are no wires; everything else is surface mount. Our superhigh-precision clock oscillator is mounted a hair from the main engine switch. All the circuits are independent. Instead of a two-layer PCB, we have six layers. The signal is very well insulated, with very minimal radiation leakage.”

What’s that oscillator for? “When the Ethernet signal arrives, it is undone, so to speak, and redone,” Bonotto replied. “The bits (information) are transformed, encapsulated, and made into symbols so they can travel down the line in a more efficient and noise-proof way. When they arrive, everything must be de-encapsulated, as it were, and transformed back into bits. Then it gets routed and gets re-encapsulated and resent out on the other port. For this to happen, you need a clock base—a timing base. It’s the oscillator that makes it possible.”⁶

While you can use the QNet’s supplied switch-mode power supply to operate it, such supplies are “major sources of noise that propagates all over the place,” Bonotto said. “They’re superefficient, compact, and relatively cheap, but the price you pay for switching the AC input at megahertz speed and transforming it into DC output is noise. Even in larger switch-mode supplies, there’s no way you can get rid of all the noise.

“Linear power supplies like the QSource are dead quiet but much less efficient. Because they require transformers, they’re not cheap. Our QSource was built to minimize all potential sources of noise between input and output. You get what you pay for.”

Nordost’s team set out to tackle every noise source they could identify. “Beyond the choice of parts within the QSource, we paid attention to the way we arranged and connected them, and to the precision to which we built our PCBs,” he said. “It’s something of a miracle that we fit everything inside the case. Don’t forget that the power cable you use on it also makes a difference.”

Potential roadblock = opportunity

When Nordost rep Michael Marko arrived to install the switch, it would not transmit a signal from router #2 to my other compo-

All that from a simple switch?

nents. After several emails and phone calls to Bonotto, we traced the problem to an error with my network configuration. After that was corrected and my optical network was rerouted, the QNet functioned flawlessly.

Many weeks after Marko visited, I reconfigured the optical network, eliminating two electrical/optical converters, the HD Plex 300 that powered them, and an Ethernet cable.

Let there be music

Midway through the review period, my dCS Rossini DAC, which I use with the Rossini clock, was upgraded to Rossini Apex status; this allowed me to hear more of what I’d already discovered the QNet and QSource could deliver. Other components included a D’Agostino Momentum HD preamp and Progression M550 monoblocks, Wilson Alexia 2 loudspeakers, AudioQuest Niagara 700 and 5000 power conditioners, and a Stromtank S 1000 battery power AC regenerator. Ethernet cables were Nordost Valhalla 2 and Wireworld Platinum Starlight Cat8. Power cables were Nordost Odin 2, a single Valhalla 2, and AQ Dragon. Interconnects were Nordost Odin 2. Supports were from Wilson and Nordost, and the rack a Grand Prix Monza. And then there was the room treatment . . .

I approached both QNet and QSource with healthy skepticism. I was not prepared for what I heard.

Herb Reichert hinted, in his August 2022 Gramophone Dreams column, that he is under the spell of Maria Callas, one of the great opera singers, “who supercharge the air in front of them with the

⁶ Bonotto’s characterization of how network switches work surprised me. I was under the impression that network switches merely directed packets from one MAC address to another—so what’s all this de-encapsulating and transforming back into bits? If you’re not interested in the technical stuff, you can skip this.

As previously mentioned, a network switch is a “layer-2” device, which means that it works in the first two layers of the Open Systems Interconnection (OSI) model. In Bonotto’s preferred lingo, the two layers are called “MAC” and “PHY.” MAC refers to the data-link layer; it stands for Medium Access Control. PHY refers to the “Physical Layer”; Wikipedia says, “The Physical Layer is responsible for the transmission and reception of unstructured raw data between a device, such as a network interface controller [NIC], Ethernet hub, or network switch, and a physical transmission medium. It converts the digital bits into electrical, radio, or optical signals.” Bonotto wrote, in a follow-up email, “When transmitting, the MAC’s role is to take the actual data and assemble full Ethernet frames/packets with address, control and the actual data as needed. However, these packets are *not* sent down the cable directly. Instead, they are forwarded to the PHY unit, whose role is to take those packets and “line code” them. The reason for this is essentially to make the data more immune to noise and therefore make the whole process more reliable. On a typical 100M PHY, line coding means that the packets get converted, scrambled, and encoded into symbols for transmission, and it’s these symbols that actually travel down the cable.” Wikipedia goes on to say, “common problems occurring at the Physical Layer are often related to the incorrect media termination, EMI or noise scrambling, and NICs and hubs that are misconfigured or do not work correctly.”—**Jim Austin**

purest tones⁷ and the most dramatic dynamics.” (It’s quite possible that Herb and I share the same Callas-inspired nightmare: Jim Austin, disguised as Callas playing Lady Macbeth, approaching our computers, slashing some of our favored adjectives,⁸ and splattering our monitors with blood. But perhaps I’m projecting.)

Like Herb, I’m also soprano-bewitched, currently, by the voice of Véronique Gens singing Guillaume Lekeu’s *Nocturne*, from his *Trois Poèmes*. I cannot get it out of my head. Lekeu’s marvelous song, found on Gens’s recital *Nuits* (Qobuz 24/96 FLAC, Alpha 589), is so beautiful, so all-of-one-piece, and so perfectly accompanied by I Giardino piano quintet that I awake over and over to its melody. I’m equally haunted by the lyrics, which end (in translation), “The moon gleams like a golden clasp! / And, perfuming the happy plain, / The heather falls asleep / In the luminous shadows.” Not a bad soundtrack to one’s life.

The first thing I heard after I installed the QNet was that Gens’s voice grew in size. Colors were more vivid. As silence filled spaces between notes, the soundstage seemed to expand in all directions. All that from a simple switch?

When I ditched QNet’s switch-mode wall wart for the QSource, a touch of brightness I’d been hearing vanished and all the QNet’s positive effects increased. With more silence came more beauty and detail—and with it, more light and spiritual insight. Those insights aren’t always pretty—take Callas’s voice as Lady Macbeth—but they inevitably get me closer to truth, whose essence can be as terrible and earth-shaking as it can be beautiful and beneficent. I can honestly say that the QNet/QSource pairing transported me closer to my ultimate goal, which is to move closer to the source of artistic creation and the artists I love.

When I disconnected the Roon Nucleus+ server/streamer from the HDplex 300 and powered it, as well, with the QSource,

I heard even more color, detail, and clarity. As another veil lifted, images again grew in size and became more believable. Yes, I compared connector cable options. The Nordost premium QSource DC cables delivered more vibrant energy and subtle dynamic/tonal shifts than the stock cables. The premium’s gauge is thicker. Big surprise.⁹

Here ends the tale

Rather than listing example after musical example, I’ll simply say that it is now much easier to follow each line in even the most complex passages of Mahler or Strauss and to understand, musically, the reasons behind the complexity. Thunderous organ now resonates strongly, without inappropriate boom. Tonal color inside my music room is beyond acid-rush intensity. Outside, however, it remains Pacific-Northwest gray.

It’s been a long time since I ended a review with “I bought the review samples.” But I did. And once I realized how vital the QNet was to my system—how a simple network switch allowed me to achieve so much more of what high-end audio is about, and how much more silent and revealing the QSource was than my other linear power supply—I bought a second QSource for my etherRegen and AfterDark clock. I didn’t think a second QSource would make another huge difference, but when the soundstage suddenly expanded beyond the front and side walls, my pleasure expanded concomitantly. Don’t you love when that happens? ■

7 The multifaceted nature of those unique tones, pure or not, is a subject of endless fascination bordering on obsession. Take it from one obsessed.

8 Also adverbs. Especially adverbs.—**Jim Austin**

9 QSource cable’s terminations do not insert completely into some devices, including the Roon Nucleus+. Sometimes they loosen at the slightest touch. Nordost would be wise to address this.