

SOUND & VISION

test reports

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NetStreams

DigiLinX Audio System

With few exceptions, multiroom audio systems still distribute music the same way they did 20 years ago: Central stacks of source components and amplifiers route signals to speakers around the home over hundreds of feet of speaker cabling. But this approach has its drawbacks. Resistance, capacitance, and inductance build up over long wires, adding up to signal losses and compromised performance. And stacks of amps generate heat, which leads to other troubles.

Austin, Texas-based NetStreams has attacked these problems with DigiLinX, a fully IP (Internet Protocol)-based audio distribution system. Music originating at a digital audio server or traditional audio component, as well as control signals from keypads, is transmitted around the house on a high-speed network as Internet-style information packets. The audio signal arrives at the speaker bit-for-bit identical to what was transmitted, where it's decoded and amplified with no signal loss. The DigiLinX promise is unlimited expandability and premium audio quality. But can it deliver?

SETUP

DigiLinX systems require setup by a factory-trained installer, so NetStreams sent along their president and CEO, Herman Cardenas, to help me. We began with a multi-port Ethernet switch that functions as the hub of every DigiLinX system, monitoring the network for its owner's control signals and then acting as traffic cop, directing source signals to various listening zones. The SwitchLinX SW324 (\$1,100) has 24 Ethernet ports for Cat-5 cable connection of sources, remote amplifier modules, and control keypads.

WHAT WE THINK

This future-looking IP-audio system partners great sound with a slick interface and cool automation features, but they come at a steep price.

For the listening zones, my system included two SpeakerLinX digital amplifiers: an SL220 (2 x 20 watts, \$800, shown) to power existing in-ceiling speakers in my bedroom, and an SL250 (2 x 50 watts,

\$1,000) to drive my living room tower speakers. Additionally, a pair of Polk's new LC265i-IP self-amplified in-wall speakers created a third zone (see the full report on the Folks following this review). A TouchLinX TL380 4-inch color touchscreen wall pad (\$1,700, shown) provided control in the living room. In turn, I connected the RCA stereo audio output from my digital cable box to an AP300 audio expansion interface module (\$120, shown) that wired up to the TL380 via a single Cat-5 cable. This provides a convenient way to add analog sources to the system you'll be operating locally (such as a bedroom CD player or iPod). A KeyLinX KL200 10-button keypad controller (\$450, shown) handled control from the bedroom.

For the millions of audio components in the world that don't stream audio over IP — CD players, AM/FM, or satellite radio — a MediaLinX MLA101 (\$950) is required. This converts the audio output from the source component (analog or coaxial digital) into uncompressed WAV-format audio that can then be streamed over the network, and communicates commands from DigiLinX keypads in remote rooms back to the source (where they're converted to IR or RS232 commands to control the device).

We also connected Escent and ReQuest music servers to the system. Since these music servers can sit on a network and are currently recognized by DigiLinX, the only connection necessary was a single Cat-5 cable from each server to the SwitchLinX that carried all audio, metadata, and control signals.

Power to all the components in the system is supplied not via Cat-5, but by separate, low-power cable runs from a PowerLinX PL750 power supply (\$1,150). Once everything was live, the system was configured by connecting a laptop to the SwitchLinX. Programming — something that can take days and add thousands of

Clockwise from top:
NetStreams' AP300, SL220,
MLA101, TL380, and KL200.



THE SHORT FORM

PLUS

Virtually unlimited expandability.
Great sound quality in every room.
VoIP paging and intercom.
Add-on automation.

MINUS

Very high price-per-zone.
Fan noise requires careful placement of power supply.



TouchLinX TL380 4-inch touchscreen

key features

- Content and control signals distributed over IP
- No audio delay or synchronization problems
- No limit to the number of rooms or sources
- Control via wired touch panel or keypad, or wireless Web browser
- Audio expansion modules allow local source connection
- Accommodates analog sources
- Can control lighting and climate

dollars to the price of other whole-house installs — was quick and painless. My entire installation took about 3 hours.

PERFORMANCE

One of the hurdles to distributing audio over IP has been synchronization. Cardenas used this analogy: An e-mail sent simultaneously to 10 people would arrive at each location at a slightly different time — no big deal. However, if that e-mail was an audio signal and those people were rooms adja-

cent to each other, music even milliseconds apart would result in a cacophony of echoes. NetStreams has solved this problem — their system exhibits zero delay. As I write this, I'm watching the final round of the Masters Tournament, using the AP300 to stream audio from my cable box. Every ball strike and crowd "Oooh!" perfectly matches the onscreen action.

Though they're not much larger than a couple of decks of playing cards, don't judge the diminutive SpeakerLinX amps by their size. Both models feature high-end digital-to-analog converters for top quality audio (24-bit Burr-Brown 192 kHz D/A converters, for those in the know). While the 20-watt SL220 provided plenty of power to drive my bedroom speakers, at only \$200 more, the SL250 is the way to go. Beyond offering more power and features (user-adjustable equalization, for example), it sports higher quality components for better performance.

With the SL250 connected to my full-range towers, I listened to a variety of familiar CDs. The amp delivered clean sound with tons of output, playing loud enough to satisfy those *Risky Business* moments. But at the highest end of the volume range it grew harsh and became fatiguing for long listening sessions. Compared to my reference amp (a Denon AVR-4802 receiver), the SL250 was definitely more forward and brighter, which is consistent with my previous experiences with digital amplifiers. Cymbal crashes had more sizzle, and female vocals were always more "present" — Diana Krall's *Live in Paris*, for example, placed Diana in my face instead of up on stage.

The opening of Fiona Apple's "Sleep to Dream" has lots of low end, and while the SL250 reproduced most of it, it couldn't match the Denon. CDs with male vocals, like John Mayer's *Heavier Things*, lacked a layer of depth and fullness that the Denon delivered.

Don't mistake me — the system performed righteously. Though I favor the sound of my \$2,500 receiver, this was outstanding compared with other distributed audio systems, capable of transforming every room in the house from background music into serious listening. Still, demanding listeners might prefer integrating a traditional amplifier or subwoofer via the versatile AP300's line-level outputs. They'll also want to hide the system's PowerLinX power supply in an equipment room — it has a noisy fan that runs all the time and would be a distraction in any listening space.

I've installed many distributed audio systems, and no matter how great something sounds, if the interface isn't well-designed and easy to use, the system is a failure. With DigiLinX, the KL200 was acceptable as a controller, providing basic source and transport control, but the system *shone* when using the TouchLinX.

The touchscreen's graphics are clear and sharp, with subtle animations that bring it to life. For personalization, NetStreams just released six new

themes or "skins" for its controllers (two are shown in the photos here). Artist, album, song, and cover art information appear on the screen when using the ReQuest or Escent (DigiLinX also supports iMerge servers).

Another cool feature is that any TouchLinX in the house can control any room in the system. And the system also supports control from any Web-enabled computer or handheld device, allowing you to turn a wireless browser such as a PDA into a mobile system remote.

EXTRAS

Audio distribution only scratches the surface of what DigiLinX has to offer. Both the TouchLinX and KeyLinX feature built-in microphones for VoIP (Voice over Internet Protocol) intercom and paging functions, and for video monitoring. Panasonic IP cameras can plug straight into the SwitchLinX; you can view camera video on the touchscreen controllers and get full control over pan, tilt, and zoom. Lutron lighting and Aprilaire climate-control systems can be incorporated by adding a ControlLinX CL100 (\$600). And, most critically, NetStreams has demonstrated the ability to stream high-quality video over the system and should be adding that feature in the coming year.

BOTTOM LINE

DigiLinX is cutting-edge in almost every respect. There is no practical limit to the number of sources or rooms that can be added to the system, making it a perfect choice for large projects. Plus, its simple programming makes adding new sources and features fairly painless. At around \$3,000 per zone, going DigiLinX doesn't come cheap. But if you can get over the sticker shock, you'll have a system that delivers great audio performance today and expandability for many years into the future.

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