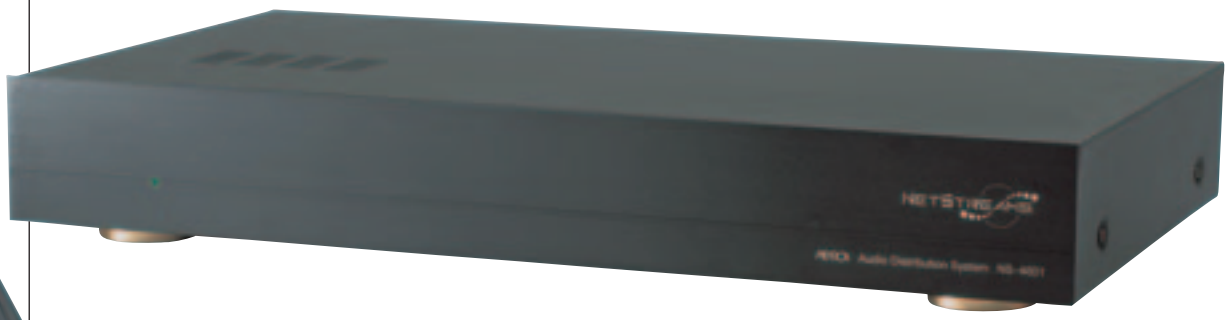
Electronically Reprinted from
AUDIO VIDEO INTERIORS
July•August 2003

by Rebecca Day

MOVING ROOM TO ROOM

You jam to Led Zeppelin in the garage, your spouse chills to Norah Jones in the kitchen and the kids keep `Nsync in the bathroom.

If you want a glimpse into the future of multi-room audio, track the projected path of startup audio company NetStreams. The Austin, Texas-based company introduced its first distributed audio system, called Musica, last fall. The analog system offers four-source distribution to six zones—a fairly standard configuration in the multi-room world.



This fall the company goes digital with DigiLinX, and the number of zones and sources will become virtually limitless thanks to the possibilities of a networked system. That's just one of the changes in the evolution from analog multi-room audio networks to digital. In short, multi-room audio is on the brink of a sweeping transformation.

First things first, though. NetStreams' analog Musica system is here and now, and it brings to market a welcome feature in distributed audio: visual feedback, or a way to see what the system is doing. Each keypad has a monochrome LCD—either amber or green—which gives you instant feedback when you press a button.

For instance, hit the arrow up button for volume and the LCD shows you a volume bar that moves with each press. That's important when you're controlling an audio distribution system from a remote room because there's typically a short delay between when you press a button and when the infrared command is received by the source components. Users who don't have visual feedback showing what happens each time they press volume up might continue to press the button until they hear a change. When the volume does change, it can blast the user out of the room. Feedback is also useful when it comes to adjusting tone controls. You can change bass and treble, balance and loudness contour independently for each room.

The LCD also shows users which source is playing and whether the system is on in other rooms. You can turn off sound in another room from any keypad, and you can turn off the main system as well.

The LCD is also used for keypad programming, an important tool for installers. Installers program a keypad as they would a learning remote control using the infrared receiver located on the front of the keypad. Once all the commands are loaded, the commands are sent to the central NetStreams preamp, which in turn sends out the commands to all the other keypads for automatic programming. Not having to program keypads independently can shave hours off of programming time.

Each double-gang Musica keypad is paired with an on-board 20-watt-per-channel amplifier. Putting the

amplifier in the room with the speakers reduces signal loss and noise that occurs when the amplifiers are located with source components at another location within the home.

The Musica preamplifier resides with the source components. It provides the IR emitter control for the four source components through rear-panel connections. The preamp also has an RS-232 communications port which enables the system to integrate with control systems such as those from Crestron and lighting systems like those from Vantage Controls.

Wiring is key to the NetStreams strategy and both in the analog version and the Internet-based DigiLinX version coming this fall. The company strongly suggests using their TwinRiver wire that includes Cat 5e cable for communication and a 4-conductor speaker cable in either 14- or 16-gauge versions. Two of the speaker wires are used as a power conduit from the preamp to the keypads' amplifier. Then all four speaker wires deliver stereo signals from the amplifier to the speakers in the room. According to NetStreams, the TwinRiver wire allows installers to pull wire securely and reliably. That's particularly important with Cat 5e wiring, which has to be installed precisely in order to maintain the data speed for a high-speed network.

NetStreams touts Musica as a more affordable alternative to a high-end multi-room distribution system, but it's far from mainstream. Buy-in price is about $2,500 (without installation) for a modest two-room system comprising the preamplifier, keypad/amplifiers and a remote control, according to Mitch Witten, VP of marketing and product planning. A six-room system would take the price up to about $4,800, he says. Wiring adds roughly about 50 cents a foot, not including the cost to pull the wire.

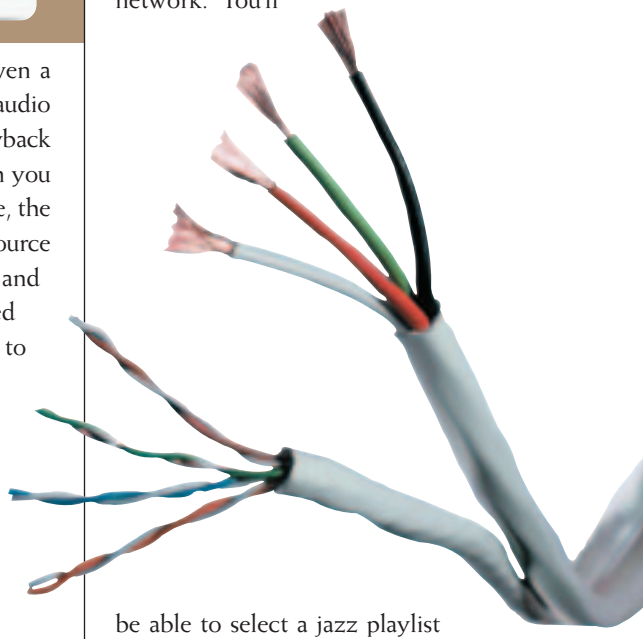
Beyond four-source, six-room control, which can be expanded to 12 zones by adding another preamp, NetStreams Musica enables users to add local sources to each room. A single-gang expansion module packs two RCA audio jacks to

easily add any audio source and even a mini plug, which can accept the audio from a portable audio device for playback through the room's speakers. When you plug in a RioPort player, for instance, the system recognizes it as an external source and you can control volume, bass and treble from the keypad. The infrared receiver on the keypad allows you to control the system from the included handheld remote.

The expansion module also packs a pair of RCA outputs. That allows you to play the whole-house sources through a separate audio system in a local room. The remote room can access the music channels from the whole-house cable or satellite system, for example, but the music from the remote system is not available for routing to the other rooms. In addition, you can easily add a powered subwoofer to any local room, or you could control a large power amplifier driving large floor standing speakers or a number of speakers in one room.

The analog version of Musica is bound by limitations of the analog world. It can't, for example, read metadata stored on digital music players. If your music is stored in a hard disk vault such as the ReQuest Multimedia ARQ, you have full control over the ARQ's functions such as start, stop, skip, etc., and you can see the status of any of those functions on the LCD screen. However, you can't scroll through playlists or select music by artist. Yet, that is.

DigiLinX takes multi-room control to the next level. It's a networked system that uses the TCP/IP Internet protocol for communication between devices. Each product acts as a node on a home network and each is individually addressable by a PC. That means you can view playlists from any device that has an Ethernet port for connection to a network. You'll



be able to select a jazz playlist from a hard disk recorder or pull in an Internet radio station from a remote room and see which station and artist are playing.

Down the road, each speaker will be addressable so that installers can equalize the speakers for a particular room. "If you put processing in the speakers you could put the intelligence in the speakers, too,"

Witten says. "So if you had a second media room, and wanted to put five speakers in a room, you could make it both a theater and a listening room. You could put the decoding in the speakers so that they would know what to play back."

Music from a portable digital audio player will be accessible via any room on the network. Any device on the system is addressable by any other room. And if the system lives up to its Universal Plug and Play promise, it will automatically recognize any UPnP device when it's added to the network without any additional programming required. "If it's a device that's designed to go on a PC network, the system will automatically detect it and tell you what and where it is," Witten says. Options for control blow wide open with an Internet protocol-based distribution system. Any Web-enabled device becomes a potential remote control. Operate the family room music system from a tablet PC. Tap your iPaq when you want to shift from rock to jazz. Turn on the system from your PC at work or from your Web-enabled cell phone on the way home and have music playing when you walk through the door. Access your music library from your vacation home using the Internet as the enabler. And let go of the idea of a four-source system. You can have all the sources you want available at any time from any room, or several people can access different songs from the hard disk at the same time.

As promising as digital networked music systems are, they're not without obstacles on the road to the next generation. For one, the wiring infrastructure required precludes most existing homes from having the technology. DigiLinX, like other digital music distribution systems, will separate the haves from the have-nots—those with wiring systems that can enable a broadband-based home network and those that can't. NetStreams uses the same wiring infrastructure for the digital system that's used for the analog version, but you still need to run a wiring bundle to every room that has music.

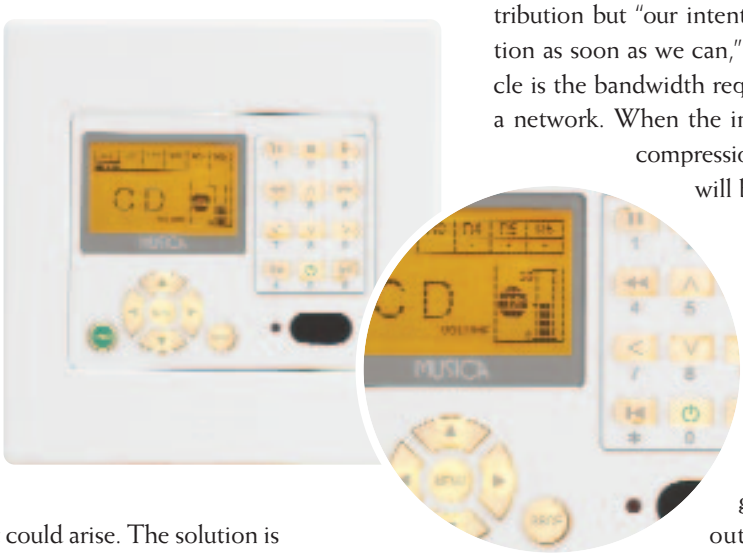
Wiring for the analog and digital systems is the same, but users have to upgrade components to networked-enabled products to benefit from the digital system. Witten says NetStreams is creating the upgrade path for consumers to migrate from analog to digital. "We're planning to make allowances for customers who purchase the existing current Musica system so that they have the opportunity to move into Digital and get something back for their original investment," he says.

That's great for those who have state-of-the-art wiring in their homes or are willing to pull the necessary wiring in a retrofit installation, but it still leaves millions of existing homes without the Ethernet backbone required for a network. Witten says, "Musica is retrofittable, as are most distributed audio systems, as long as you can pull a wiring bundle. In our case, one run of TwinRiver to each room is all that is required." Retrofitting a home with new wiring is always the most difficult part of any installation and it requires a commitment to let installers get into the walls and ceilings and crawlspaces of the home and make holes that will need to be filled back in. It is not for the faint of heart.

The company is looking at wireless network options but power requirements are problematic. "We are looking at the whole aspect of wireless so you could put a wireless PC card slot on back of a speaker with an electronic crossover," he says. "You will still need to get low voltage power (28 volts) to the speaker from within the wall to power the system but that can be easier than pulling wire to all of the rooms in the house from the system. Battery operation is an option but battery requirements and longevity are going to be key, and how do you put a battery in an inwall speaker? It would likely mean that battery operated means portable speakers that

you could move around in or outside the house."

Digital networks will also open up support and service issues that can only be projected at the outset. "DigiLinX has an Ethernet switch in it," notes Witten. "Say you already have a PC network in your house and you add our system to your network and then there's a problem later down the road when you add another component. How will the average homeowner know what caused the problem and which part of the system needs troubleshooting?" Anyone who has been passed back and forth between hardware and software service support centers can appreciate the pass-off scenarios that could arise. The solution is finding the right installer who has the expertise not only to install and integrate the home networks but to service them as well.



Another potential problem is interference on the network, Witten notes. "Let's say your computer fires off a command to your printer. Might that command interfere with an audio signal? You betcha. That's something we are aware of and we have studied. We've done tests and we know what happens. In fact, we have applied for patents in this area. We know this kind of problem won't interfere with our system," he maintains.

The company is currently focusing on audio distribution but "our intent is to do video distribution as soon as we can," Witten says. The obstacle is the bandwidth required to send video over a network. When the industry comes up with a compression standard, the company will be there, he says.

In the meantime, there's a quiet revolution happening in multi-room audio. No longer held back by the four-source, six-zone hardware configuration, multi-room audio programmers are free to think outside the black box. NetStreams, whose executives bring years of high-tech experience from GE Smart, Crestron, Sonance and Lexicon, among others, is on the front lines.

"What we're doing in this first-generation of digital product is just scratching the surface of what's possible when you move into IP-based networks," Witten says. "It's cool stuff. The intent behind DigiLinX was to open the door to a new paradigm in distributed audio."