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Homing in on sound

By Dan Zehr

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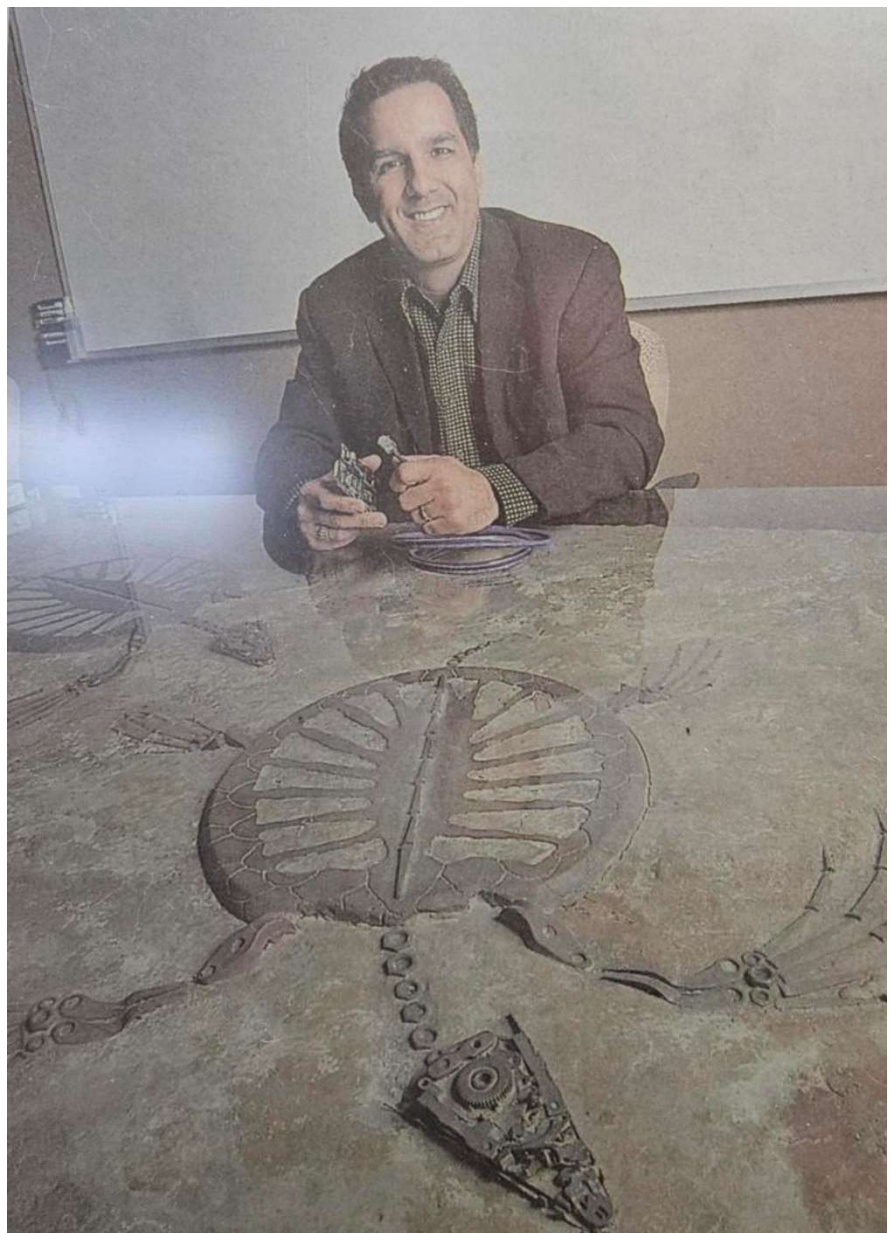
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When Bill Gates started building his mansion near Seattle a decade ago, he envisioned the ultimate in "connected" homes. Anything that could be plugged into a digital network would be plugged in, from lighting to sound.

It wasn't that easy.

"They had major problems with Bill Gates' house when they tried to do audio," said Herman Cárdenas, the CEO of an Austin startup called NetStreams, which makes digital-audio networks. "The rooms were all playing (music) out of synchronization."

Austin's NetStreams says it has developed a way to synchronize music in different rooms



Cárdenas knows. Five years ago, he was working on a joint venture with Microsoft and General Electric Co. to develop multiple technologies envisioned for the "connected home."

Within months of its start, it ended. GE bought out a promising hardware piece. It named the technology GE Smart and has made millions on it since. Microsoft took a software piece that since has become part of its Windows Media Center operating system.

Cárdenas took what might be the hardest, but most promising, piece of the venture. "My condition was: 'OK, I'll sell the business if both of you guys allow me to buy the audio-video part,' " he said.

It became NetStreams, which developed technologies to turn an analog, multi-room sound system into an interactive, flexible digital network.

High-end, home-entertainment installers and analysts who have used NetStreams' products say the company has conquered the synchronization troubles Gates encountered in his vision of using Internet protocol to control a home-audio system. As for the sound system at the Gates' mansion, Cárdenas said, it's still based on more traditional analog systems.

"We'll offer him our solution at some point," he said.



Vital component?

NetStreams' systems could prove a vital piece in the convergence between digital entertainment content, hardware and distribution.

Its solution is all digital. Right now, home entertainment is a mix of old-style analog and new digital: DVD players and digital cable boxes often married to analog TVs and stereo equipment.

And by using the same IP language that makes it possible to deliver an e-mail to an individual computer on the Internet, the technology opens the home-entertainment network to all kinds of devices, from a CD player to a satellite radio receiver. Mom can sit on the back patio and listen to a jazz station on satellite radio while Dad jams classic rock on his iPod through speakers in the garage.

It's attracting plenty of attention in the industry.

"When we became familiar with what they were working on, we said, 'This is pretty exciting stuff,' " said Paul DiComo, marketing manager at Polk Audio Inc., one of the world's leading speaker manufacturers. "We saw a lot of potential there."

In the next couple months, Polk will roll out speakers that integrate NetStreams' technology so they can play music directly from a digital network. Because Polk builds a digital amplifier and processor right into the speaker, sound quality improves.

"When you run long runs of speaker wire, you get degradation of the signal," DiComo said. "This stays digital right up to the module."

Other applications

That's just the beginning. NetStreams plans to roll out similar systems for video distribution later this year or early next.

The company already is branching out into the commercial market for office buildings, convention centers and the like, Cárdenas said. NetStreams' current users have the systems custom-installed in their homes.



"What I see happening is moving from the very high end to a broader market, where I can start to afford some of this, too," said Bill Ablondi, director of home-systems research at Parks Associates, which researches home networks and digital entertainment. Companies have developed digital audio networks, Ablondi said, but NetStreams got a step up on its rivals when it developed a way to solve Gates' problem: synchronizing sound across multiple rooms. That means Miles Davis won't be riffing a beat or two later in the kitchen than he is in the dining room.

But it also provides more flexibility. Other digital systems rely on a central server in one place to send music or video to other rooms, Ablondi said. Because all the sources and all the touch-screen control panels in each room are part of the same NetStreams network, users can pull music from any source in any room: a PC, MP3 player or a digital music channel from their cable or phone company.

They can play one synchronized song throughout the house or listen to any number of tunes in any number of rooms.

"They're addressing the controls to allow users to pull this song from that computer and that song from that other device over there," he said. "That really is a key differentiator."

Using Internet protocol allows NetStreams to interact with other types of products, such as lighting and security systems. That "connected home," after all, was the initial motivation for the Cárdenas-Microsoft-GE partnership.

The IP technology also allows a homeowner to control the entire system from any secure Web-enabled device, from a computer at the office or with a handheld PDA halfway around the world. Within the building, the systems work over a touch-screen pad for each zone.

For now, each unit is connected with high-speed Ethernet wires run through the walls, but ultimately the system could be wireless. And because it's based on Internet protocol, the network doesn't require the extensive programming needed for other systems.

"We can do a system in a couple hours instead of a week with all the custom programming with other manufacturers," said Joel Biggerstaff, president of Biggerstaff Audio, Video and Lighting Control in Marble Falls.

NetStreams doesn't disclose its financials, but Cárdenas said revenue increased "several hundred percent" last year and is expected to grow at least that fast this year.

The company has trained about 1,500 dealers to install its systems, he said.

Biggerstaff has installed about a half-dozen NetStreams systems, including one in his own showroom and one in a home near Austin that has 17 different audio zones.



That's along the high end of course, but even smaller setups are expensive. Biggerstaff estimated that a six-zone NetStreams system fully wired and decked out with extra hardware, such as a big central music server would run about \$25,000.

The basic hardware for the entry-level Musica systems, which NetStreams rolled out soon after it started, costs about \$750 per room, the company said. The more advanced DigiLinX system, which came out in 2004, runs from \$1,300 to \$2,000 per room. Neither one includes the cost of other audio hardware, such as the digital tuner or home-theater system, or installation, which can boost the price.

"It's a little bit more expensive than other systems, but others don't have the same functionality," Biggerstaff said. "And all the other systems are analog, not IP-based."

Focus on high-end

For now, NetStreams will concentrate on the high-end audio market, which Ablondi and Parks Associates estimate at \$1.6 billion in the U.S. alone.

It will be refining its video-distribution products, one version of which it demonstrated in January at the Consumer Electronics Show in Las Vegas. And it will start working the commercial market.

Eventually, Cárdenas wants to license the technology to other consumer-electronics manufacturers and push it into the mass market. A name-brand CD player, for example, could include a NetStreams chipset that would allow it to automatically interact with the rest of the system.

"The question becomes, what is the price point for this?" said Joni Blecher, a home-theater analyst at Jupiter Research. Consumers also "will ask if they can install it themselves, but the price point would have to be key."

NetStreams isn't in a hurry to enter the high-volume, low-profit consumer market yet, but Cárdenas sees a time when you could buy a home-theater system, put the speakers where you want them and the system will set itself up from there. Just take your favorite seat, snap your fingers and the speakers would locate you and adjust themselves to deliver the best sound for where you're at.

"All of a sudden," he said, "plug-and-play home theater in a box."

No better place than Austin

Herman Cárdenas and three colleagues Kim Anthony Parker, Paul Bryson, and Michael Braithwaite packed up their Las Cruces, N.M., offices in 2002 and started looking for a place to start their new digital-entertainment company.

They hit the usual stops: Silicon Valley, North Carolina's Research Triangle Park, Seattle.

Austin "just felt right," Cárdenas said.

He recalled getting into a cab with his chief technology officer, Michael Braithwaite, who spotted a book about universal Linux operating systems on the front seat. The cabbie told them he'd recently been laid off from Cirrus Logic Inc., which makes microchips for audio and communications systems.

"We also had heard it was the live music capital of the world," Cárdenas said. "What better place to develop the future of audio distribution than the live music capital of the world?"

NetStreams today has 50 employees, including 35 engineers, in Austin. It's backed by venture capitalists, including Austin Ventures.

- Dan Zehr

Deborah Cannon AMERICAN-STATESMAN NetStreams CEO Herman Cárdenas had this table made in New Mexico, and he brought it with him when he moved the business to Austin. He points to the fossil motif as an example of what happens when companies move too slowly. Using Internet networking protocol, NetStreams makes it possible to pipe digital music anywhere in the house without skipping a beat. For now, it's purely a custom job, although speaker maker Polk Audio is incorporating the technology.

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SOUND: Company plans to offer systems for video

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