‘Plain old telephone service’
a thing of the past?

Lucent, IIT develop ‘pretty amazing’ software

By Howard Wolinsky
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Four years ago, telecom experts were about ready to write off the 100-year-old wired phone system, known in the industry as POTS (Plain Old Telephone Service), predicting it would soon be eclipsed by the Internet and wireless phones.

But researchers from the Illinois Institute of Technology and Lucent Technologies’ Naperville campus have developed new software that turns POTS into PANS (an industry term for Pretty Amazing New Stuff), moving the old phone system into the Internet loop.

Over the last two years, Vijay Gurbani, 37, a doctoral candidate in computer science at IIT and a Lucent researcher, and his colleagues have added some Internet digital magic to old-fashioned analog phones. This work, which has earned one patent thus far for Gurbani, is expected to result in Lucent commercializing the services within a few years. So the technical breakthrough could be coming soon to phones in the home and office.

“In the Internet era, wired phones were being written off,” Gurbani said. “Cellular companies were spending billions of dollars on new infrastructure to make 3G (third-generation) services available for cell phones. I wanted to see if it was possible to make 3G-type services available on landlines.”

It was possible.

In fact, IIT and Lucent researchers have developed software that recycles POTS so it can handle buddy lists and instant messaging, the same kinds of services that have been wildly successful over the Internet for America Online and MSN, and also are available over some Internet appliances, such as 21/2G and 3G cell phones and personal digital assistants.

“The phone network has been used for its voice capabilities and the Internet for its data capabilities. The two networks have virtually never talked to each other — until now,” said Xian-He Sun, Gurbani’s computer science professor.

Researchers developed software that connects landline phones to the Internet. Ironically, in the past, the old system mainly was used to connect computers to the Net.

In a demonstration at Lucent, a landline phone was lifted and replaced on the cradle, and it sent a signal that made the network aware that the user was home, popping up an icon on a buddy list on a computer screen.

Buddy lists have been done previously with computers and cell phones, but never before with signals from landlines, which in the past were considered “dumb terminals,” Gurbani said.

Sun said the wired phone network could send an instant message to an Internet user, notifying him of missed calls. This could be a sort of mobile caller-ID to check on traditional phones at home or work.

Xian-He Sun (from left), Vijay Gurbani and Nehal Mehta have developed a way for typical landline phones to tap into buddy lists to aid in communication and even notify a person when a friend is near.
He said companies could use these buddy lists to set up large-scale phone conferences. In addition, caller ID screens on landline phones could be used to receive text messages.

Nehal Mehta, a doctoral student at IIT, and Lucent researchers Byron Williams and Sudha Gouthma also have worked on the project.

Mehta said the new technology has great commercial potential because wired phones are not disappearing in North America, “where the system is so reliable and ubiquitous.”

This opens market possibilities for local phone companies, such as SBC, BellSouth and Verizon, all of which are Lucent customers.

Doug Varney, technical manager of Lucent’s network services architecture group, said, “Traditional phone companies are looking for new services like this because they are losing customers to long-distance companies and wireless carriers. They could leverage their embedded investments, and bring in new revenues by offering new services. I think (buddy lists and instant messaging) are just the tip of the iceberg.”

Gurbani said the services next will be tested on older-model cell phones, and other services will be developed. For instance, he said the framework could make possible “proximity notification,” a service that triggers an e-mail from a friend’s cell phone when the friend is nearby. He said the new technology could be used by law-enforcement officials to track suspects.

What about telemarketers or other unwanted parties tapping into the system to find out if someone is home, in effect hacking into buddy lists?

Gurbani said these are real concerns: “Security and privacy issues will have to be worked out.”

He sees more advantages than disadvantages to upgrading the old system: “This technology creates even more communication freedom for busy people on the go.”