

BUSINESS

SUNDAY, APRIL 22, 2001

Showdown at the Digital Corral

Internet-Based Single-Number Plan Starts a Global Tug of War Over Control

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The Contact-Information Roundup

"Enum" technology could make it possible to reach all of a person's communication devices with one number.

An e-number is derived from a telephone number...

46-8-976-1234

which is reversed...

4321679864

dotted and suffixed... 4.3.2.1.6.7.9.8.6.4.e164.arpa

... creating an Internet address through which all messages are directed.

The number allows one message to reach any of a number of devices.

The recipient would control access to each of the devices.

Like many people nowadays, Patrik Falstrom rarely stays put for long. To keep tabs on the globe-trotting telecommunications engineer, you have to know eight different contact numbers and addresses. Home, work and fax phones in San Jose and Stockholm. Cell. And e-mail.

Having to remember all those digits and letters is one of the irritating side effects of our increasingly connected world—and one for which Falstrom hopes he's found a solution.

He's outlined a plan to allow a phone number to also serve as the basis for someone's e-mail address. The arrangement would effectively allow a person to reach all kinds of devices by knowing a single contact number.

That simple idea has won the endorsement of an influential advisory panel that is responsible for reviewing Internet standards, and it has become part of an international tug of war over who might one day run a merged communications network.

It's a battle being waged in the Washington area by two companies on either side of the Potomac, each with designs on managing the central database. NeuStar Inc., with headquarters in Northwest Washington, currently oversees the master list of telephone numbers for North America. Over in Herndon sits its counterpart in the Internet world, Network Solutions Inc., a VeriSign Inc. unit that doles out addresses for Web sites.

Theirs is a competition that pits the heavily regulated telephone industry against Internet upstarts and their aversion to government rules. Some nations have injected themselves into the debate out of concern that a merged network could undermine state-run telephone networks. Privacy advocates, meanwhile, fret about how the unified contact information would be protected.

"The technical issues are simple. The question is, can we survive the politics of it all?" says Richard Shockey, a NeuStar executive.

The impetus for the debate was a nine-page technical paper prepared by Falstrom, a Cisco Systems Inc. engineer, that suggested the current telephone system could be linked to the Internet simply by making the phone number part of an Internet address.

See NUMBERS, H4, Col. 1



'Enum' Competition Pits Phone Industry Against Internet Start-Ups

NUMBERS, From H1

Falstrom called the idea "enum."

Under his plan, the main number for the White House, 1-202-456-1414, would become 4.1.4.1.6.5.4.2.0.2.1.e164.arpa, as an Internet address. That's the phone number backward with ".e164.arpa" tacked on to the end. The system would recognize both as belonging to the same person.

Falstrom picked ".e164.arpa" in part to appeal to the egos of both the telephone and Internet worlds: "e164" is what the telephone carriers use to refer to their numbering system, while ARPA is the acronym for the Advanced Research Projects Agency, the U.S. government agency that gave birth to the original Internet.

Under Falstrom's plan, users would not be required to use the common number; they could still maintain separate phone and e-mail listings. But if they so chose, they could take advantage of the system to simplify their contact information. For instance, users could go to a Web site and set up their preferences. If someone typed in a contact number to send an e-mail it would be directed to a corresponding e-mail address. A phone call would be routed to one number or forwarded to a second—such as a pager or cell phone—if there was no answer at the first, depending on what preferences the user at the other end selected. It might even be possible for people to route certain calls, say from a spouse, to one number and all others to another.

Falstrom and his supporters argue that a government-sanctioned standard for a centralized system is needed to avoid the consumer confusion brought on by the growing number of devices people use to communicate with one another.

Companies ranging from anonymous upstarts to AOL Time Warner Inc., Microsoft Corp. and AT&T Corp. are betting their companies on anywhere, anytime systems that will let users get their calls, e-mails, instant messages, music, videos and other services through a wide variety of devices. The problem so far has been that consumers with AOL gadgets often can't get Microsoft Hotmail messages, and vice versa for Microsoft contraptions.

"In the last two years we have seen a zillion technical gadgets appear in stores," Falstrom says. "But few people will actually want to use them if they can't be interconnected."

So far the only group to act on Falstrom's proposal is the Internet Engineering Task Force, a standards body made up of roughly 3,000 academic and industry volunteers from around the world. The task force's recommendations are advisory. The organization has no enforcement powers. Its authority comes from the moral suasion of its member base, many of whom helped build the Internet in the first place.

The task force has been coordinating its efforts with the International Telecommunications Union, the United Nations treaty

organization that has more formal power over the world's telephone network. The ITU, though, is still debating the issue.

Since the IETF acted, no fewer than four executive agencies and one nongovernmental group have been studying whether they should assert their power over the telephone-Internet database: the Federal Communications Commission, which oversees the telephone system; the Commerce Department, which has taken charge of the Internet's addressing system; the State Department, which has the responsibility for cross-border issues; and the Federal Trade Commission, which is charged with protecting consumers, and is studying the privacy issues the scheme raises.

Additionally, the Internet Corporation for Assigned Names and Numbers (ICANN), a nonprofit organization operating since 1998 by contract with the government, has some jurisdiction over the Internet's addressing system. It has so far declined to get involved, turning down proposals from private companies to set up their own systems under the ".tel" or ".num" domains.

Given that the plan sits at the intersection of the telephone and the Internet realms, it presents a tricky policy issue for the United States.

"You're mixing the telephone world with the computer world. The telephone world comes from a history of being controlled by national governments. In the

Internet space, it's been laissez-faire," says Bill Whyman, president of Precursor Group, an independent research firm.

One of the most important questions the government could decide is who will take charge of the address book that will map the telephone numbers to Internet addresses.

Under Falstrom's plan, the responsibility for managing the address book for this telephone-Internet would fall on individual nations. That is, the United States would oversee all numbers in country code 1, France would take 33, Bolivia would manage 591, China 86 and so forth.

But several countries, including Pakistan, have been so concerned about the possibility that telephone calls may one day be routed through the Internet that they have made it illegal to do so—for fear they could lose long-distance revenue.

In the United States, the two companies that maintain similar sorts of information are NeuStar and VeriSign. NeuStar got its telephone contract, worth \$4.8 million last year, from the FCC. VeriSign got its Internet deal from ICANN and now makes more than \$400 million a year off the domain-name business.

NeuStar executives were instrumental in creating the enum standard and the company has been lobbying for the government to approve the proposal as quickly as possible. VeriSign, on the other hand, is pushing regulators to stay away from the debate, leaving it up to the marketplace to

decide. The company already has begun testing its own alternative system, which lets users type phone numbers into their mobile devices to reach Web sites such as www.delta.com.

Still unclear is how the database would be protected against hackers or other mischief-makers who might try to steal information or change people's contact information.

"The bottom line here is that the enum proposal needs to be viewed with a certain degree of concern about making sure that the domain databases are populated with valid information," said Vint Cerf, an executive with WorldCom Inc. and one of the Internet's founding fathers.

University of Miami law professor Michael Froomkin, who has testified before Congress about Internet issues, said a telephone-Internet address book might end up being more valuable than the combined systems that NeuStar and Network Solutions currently manage—especially if it ends up assigning a unique number to each person. It could prove to be the ultimate marketing database, a vein of information that people might prefer to keep private.

"All of a sudden we have something that could be used to track and trace people around the world and build dossiers about them," he said.

Staff researcher Richard S. Drezzen contributed to this report.