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ND team tests 'parasitic computing'

Web servers utilized to solve math problems

By **MATTHEW FORDAHL**
 Associated Press Writer

Uncovering a relatively benign vulnerability in the Internet, University of Notre Dame researchers have tricked Web servers around the world into solving math problems without permission in a practice known as "parasitic computing."

Unlike hackers who exploit flaws to gain direct access to machines, the Notre Dame computer scientists created a virtual computer by using the fundamental components of the Internet's infrastructure, according to a report in today's journal Nature.

Each problem was broken down into smaller pieces that were evaluated by servers in North America, Europe and Asia. The results from each were used to reach a solution.

The process works a lot like distributed computing, which draws huge amounts of processing power from multiple Internet-connected computers for such tasks as searching for alien life and cracking encryption keys.

In parasitic computing, however, the work is performed without the server owner's knowledge or permission.



Jay Brockman, left, and Vincent Freeh, both faculty members at the University of Notre Dame, have identified a parasitic computer process that utilizes World Wide Web servers for computing power without the server owners' knowledge.

Tribune Photo/GENE KAISER

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The parasitic computing probably did not break any laws.

Still, the approach raises ethical questions, said Vincent Freeh, a Notre Dame computer science assistant professor who co-authored the report along with professor of physics Albert-Laszlo Barabasi; Jay Brockman, an assistant professor of computer science; and Hawoong Jeong, a research assistant professor of physics.

"When you're on the road, do you use a McDonald's restroom without buying a hamburger?" Freeh said. "That's the ethics of what we're dealing with."

The research was primarily an academic exercise and not a particularly good way to solve problems. For one, sending out data over the Internet requires more work than the simple problems solved in the experiment.

"In no case did we say it could be efficiently exploited," Freeh said.

Scott Blake, director of security strategy at BindView Corp., a network security firm, agreed it is unlikely the technique will be exploited because the system is simply too inefficient.

"We don't think anyone should think their computer is going to be used for nefarious purposes," Blake said. "This is entirely theoretical. I'm not convinced there is going to be a practical application of it."

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