



FOR IMMEDIATE RELEASE

Breakthrough Research Speeds and Secures Internet Voice Traffic

Cisco, Verizon, NYU-Poly and Columbia University Collaborate on Security

NEW YORK, October 8, 2009 – Cisco is joining with the Center for Advanced Technology in Telecommunications and Distributed Information Systems (CATT) at Polytechnic Institute of New York University to commercialize breakthrough security technology developed by scientists at Columbia University and Verizon Laboratories. The project will speed processing and secure voice traffic on the Internet. It will be a first step toward protecting the next generation of routers used by telecom service providers and large enterprises.

The security platform developed by Verizon and Columbia University is the fastest of its kind in the world. Called a SIP-Aware Application Layer Gateway because it uses the Session Initiation Protocol (SIP), this security filter allows or disallows Voice over Internet Protocol (VoIP) traffic as it enters Verizon's next generation packet-based network. Encapsulating information and services into packets is expected to enable more voice, data and video traffic to speed across wired and wireless networks in the near future.

Prototype Conquers Difficult Challenges

The SIP Gateway device dynamically opens and closes "pinholes" that allow legitimate VoIP traffic to enter the network while filtering out unauthorized messages. The SIP signaling channel itself also has new filters that prevent SIP-specific denial of service attacks. These new filters use a technique known as deep packet inspection to try to determine when unauthorized users are trying to harm or disable service.

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“This groundbreaking technology was scaled to work in a large, carrier-class network such as those offered by Verizon -- a significant accomplishment all by itself,” said Shivendra Panwar, CATT director. “There were intrinsic difficulties because it required intensive use of high-speed parallel computing.”

For its laboratory prototype development, Verizon scientist Gaston Ormazabal chose a highly distributed hardware platform based on a specialized network processor from Intel and collaborated with Henning Schulzrinne, Julian Clarence Levi Professor of Computer Science at Columbia’s Fu Foundation School of Engineering and Applied Science. They developed algorithms that would power the SIP Gateway device. SIP – a signaling protocol that controls VoIP similar to the way that land lines are switched -- was co-developed by Schulzrinne, who is also one of the principal investigators of this CATT project.

Using the Verizon-funded distributed computing VoIP test bed at Columbia and the SIP Gateway device, Schulzrinne was able to filter SIP traffic at speeds never before seen. The resulting SIP-Aware Application Layer Gateway was unique: It prevented SIP-based denial-of-service attacks at carrier-class data rates while fully conforming to the SIP protocol.

The results were presented publicly for the first time at the IPTComm 2007 Conference (www.iptcomm.org) in New York in preliminary form, then in full at the IPTComm 2008 Conference in Heidelberg, Germany.

From Prototype to Production

The CATT project will attempt to bring the technology from prototype into a stage at which it is ready to perform in the routers of telecom providers and other large enterprises.

The CATT is principally based at NYU-Poly but also has significant Columbia University participation.

“Cisco is counting on the world-renowned expertise in hardware development of NYU-Poly’s faculty,” said Flavio Bonomi, head of Advanced Architecture and Research at Cisco. He will guide the project, which will be led by Cisco’s Sateesh Addepalli in conjunction with Verizon’s Ormazabal and NYU-Poly scientists.

The principal investigator at NYU-Poly will be Ramesh Karri, associate professor of electrical and computer engineering. Karri’s research at NYU-Poly, focusing on all aspects of hardware security including hardware accelerators and computer aided design of secure hardware architectures, is ideally matched for this phase of development.

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The Silicon Valley Community Foundation and Cisco Foundation gave the research grant.

“The Cisco grant and the previous Verizon support for this research are votes of confidence in the CATT’s ability to deliver technological solutions of immediate impact to industry and society at large,” said CATT’s Panwar.

NYU-Poly’s Karri said: “We look forward to this collaboration with world renowned experts from Cisco, Verizon and Columbia. Our students will benefit from working on problems with immediate impact in securing VoIP technologies and on cutting-edge, multi-core based network processing platforms from Cisco.”

“I look forward to having our algorithms, measurements and testbeds contribute to more secure VoIP services in commercial products and services,” said Columbia’s Schulzrinne. “Our algorithms make it much more difficult for attackers to interfere with telephone service or to disrupt future networks.”

Stuart Elby, chairman of the CATT Advisory Board and vice president of network architecture at Verizon, said: “A more secure and robust network will open doors throughout the world, allowing people to communicate and share potentially life-changing information with an ease never experienced. We are excited to be part of this project.”

Edward Reinfurt, executive director of the New York State Foundation for Science, Technology and Innovation (NYSTAR), which supports the foundation, said: “This is a prime example of the kind of collaboration that NYSTAR foresaw when it began its long-term support of the CATT. This project will help commercialize research for the benefit of New York State’s economy, and it could help create a more secure global communications network.”

About the Center for Advanced Technology in Telecommunications

The Center for Advanced Technology in Telecommunications and Distributed Information Systems (CATT) is a research and education group at the Polytechnic Institute of New York University that also draws on the expertise of key researchers at Columbia University. Its mission is to foster industry/university partnerships and education in order to commercialize research on information technology and wireless communication. Created in 1982, its principal sponsor is the New York State Foundation for Science, Technology and Academic Research (NYSTAR). For more information, visit <http://www.catt.poly.edu>.

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About Columbia University

A leading academic and research university, [Columbia University](#) continually seeks to advance the frontiers of knowledge and to foster a campus community deeply engaged in understanding and addressing the complex global issues of our time. Columbia's extensive public service initiatives, cultural collaborations, and community partnerships help define the university's underlying values and mission to educate students to be both leading scholars and informed, engaged citizens. Founded in 1754 as King's College, Columbia University in the City of New York is the fifth oldest institution of higher learning in the United States.

About Polytechnic Institute of New York University

Polytechnic Institute of New York University (formerly Polytechnic University), an affiliate of New York University, is New York's most comprehensive school of engineering, applied sciences, technology and research, and is rooted in Polytechnic's 155-year tradition of invention, innovation and entrepreneurship – i²e. The institution, founded in 1854, is one of the nation's oldest private engineering schools. In addition to its main campus at MetroTech Center in downtown Brooklyn, it offers programs at sites throughout the region and around the globe. NYU-Poly has centers in Long Island, Manhattan and Westchester County; globally, it has programs in Israel, China and will be an integral part of NYU's campus in Abu Dhabi opening in autumn 2010. For more information, visit www.poly.edu.

About Verizon:

Verizon Communications Inc. (NYSE:VZ), headquartered in New York, is a global leader in delivering broadband and other wireless and wireline communications services to mass market, business, government and wholesale customers. Verizon Wireless operates America's most reliable wireless network, serving more than 87 million customers nationwide. Verizon's Wireline operations provide converged communications, information and entertainment services over the nation's most advanced fiber-optic network. Wireline also includes Verizon Business, which delivers innovative and seamless business solutions to customers around the world. A Dow 30 company, Verizon employs a diverse workforce of more than 235,000 and last year generated consolidated operating revenues of more than \$97 billion. For more information, visit www.verizon.com.

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