

BREAKING GROUND

Easing the Internet's growing pains

THE TECHNOLOGY Ever wish that the music you are streaming on your phone could continue seamlessly from your local coffee shop's WiFi, to your cellular network while you run errands, to your home's WiFi as you walk into your house?

Computer scientists at Princeton recently have developed a new system — called Serval — that will let your device easily switch between wireless networks without losing connectivity. This next-generation networking, named for an African wild cat as well as for the “service access layer” it describes, aims to increase efficiencies of Internet services by allowing companies to shift data traffic between servers.

“Right now, there is no easy way for application connections to transparently switch between two networks,” says Michael Freedman, the assistant professor of computer science who heads the Serval development team. “Users or applications have to manage their connections manually.”



Freedman

WHAT IT MEANS FOR THE INTERNET The architecture of the Internet goes back to its early days in the 1970s, when computers were few and had fixed locations, Freedman says. Thus, the addresses of computers were mapped to specific network locations. But today, people want to speak not to individual computers but to services such as Facebook or Google. Behind these services are many computers, with many physical addresses. By creating an extra layer within the Internet's architecture, Serval would allow a user to connect to these services seamlessly, identifying a service rather than a physical computer.

New Internet applications are shoehorned into the existing architectural layers of the Internet, leading to management and performance problems, says Freedman. The team behind Serval has figured out how to wedge its system into the current architecture while making matters more simple. “Serval sits carefully on top of the network layer, rather than replacing it,” Freedman says. “But it can hide a lot of complexity, making it easier to build and manage applications that in turn run on top of it.”

PUTTING THE TECHNOLOGY TO USE The development team has created a Princeton network to show how Serval works while it moves to test the system in larger, complex networks. The Serval website (<http://www.serval-arch.org/>) runs on the Serval system. “Since Serval is still new, no one can be sure what the main application will be,” says Jonathan Smith, professor of computer and information science at the University of Pennsylvania. He predicts that Serval's key function will be better access for mobile devices. **P** *By Anna Azvolinsky *09*

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