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Editor's Note

Technology Daily will not publish on Monday, May 30. We will resume publication on Tuesday, May 31.



Broadband

Researchers Say 'Mega Broadband' Just Around The Corner

by [Randy Barrett](#)

As Congress readies for a rewrite of telecommunications law, network researchers are pushing the limits of broadband far beyond anything policymakers have considered.

Much of the work is federally funded through the [National Science Foundation](#) (NSF) and the [Energy Department](#). **Simon Szykman**, the new director of the National Coordinating Office for Information Technology Research and Development, estimates about \$35 million is spent by federal and state agencies annually on advanced, high-speed network research.

While that budget may not turn heads in some research communities, the data-transfer rates already achieved by optical networking testbeds -- with names like Cheetah, Dragon and Omnet -- is impressive. Several are now delivering speeds of more than 200 gigabits per second. The fastest production network operated by the Internet2 consortium currently runs at 10 gigabits per second.

"We're doing Internet3," said **Joe Mambretti**, director of the [International Center for Advanced Internet Research](#) at Northwestern University in Evanston, Ill. "The capacity of wavelengths is constantly going up. We're showing what is possible if you want to build services on top of individual light waves."

That means broadband speeds of 100 megabits per second or more to homes and businesses are just around the corner, said researchers. Several expect commercial services to adopt the new technology in the next three to five years. It will allow the delivery of on-demand, high-quality video, they said. Today, home broadband peaks at about 10 megabits per second.

To get there takes a fundamental rethinking of the Internet's core architecture, said **Edward Knightly**, a leading wireless researcher at Rice University in Houston. That includes new switches, multiplexers, protocols and data-traffic control. Fiber is not the issue. During the Internet boom in the 1990s, thousands of miles of cable were buried and much of that capacity remains unused.

Knightly is a leading researcher in the NSF-funded 100x100 Project which seeks to prototype technologies that could deliver 100 megabit broadband access to 100 million homes by the end of the decade. "A combination of fiber

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and wireless will be the ultimate answer," he said.

Central to the effort is a new concept called dynamic provisioning that allows quick set-up and tear-down of gigabit-speed network connections between two points. Currently, getting such service requires calls to carriers and rental of fiber that takes months to set up.

"We can get paths up in a matter of seconds and do it more cost efficiently," said **Jerry Sobieski**, director of research initiatives for Mid-Atlantic Crossroads, which operates the Dragon testbed.

The Dragon network regularly transfers multi terabyte-sized files between NASA, the National Oceanic and Atmospheric Administration and the University of Maryland. A typical video store holds about eight terabytes of data.

"We can tweak people's imaginations," said Sobieski, who lamented he can only get the slower-speed digital subscriber-line (DSL) access at his home.

Network researchers agree the challenge of delivering ultra-high broadband to the public is far less about technology and much more about politics and policy.

"There is very little understanding of the technology revolution in Washington," said Mambretti. "They're slowing down the economy of the U.S."



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