

# New ultra-high speed network connection for researchers and educators

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U.S. Energy Secretary Steven Chu today announced the activation of an ultra-high speed network connection for scientists, researchers and educators at universities and National Laboratories that is at least ten times faster than commercial Internet providers. The project – funded with \$62 million from the 2009 economic stimulus law – is intended for research use but could pave the way for widespread commercial use of similar technology.

"While this breakthrough will make sharing information between our labs much more efficient, its potential goes far beyond that," said Secretary of Energy [Steven Chu](#). "This faster speed at which data can be shared could pioneer the next era of Internet innovations, changing and improving our lives much like the original commercialization of the Internet did in the mid-90s."

If this [network](#) drives innovation that finds its way into widespread commercial use, it will be an example of history repeating itself – since the World Wide Web has its origins with high energy physicists at CERN who needed a better, faster way to share their data. Physicists in the United States, including Energy Department laboratories like Fermilab and the Stanford Linear Accelerator, were also among the earliest pioneers. It is this same fundamental need – sharing scientific data and linking computer networks together – that is driving the next generation of high speed Internet connection technology.

## WHAT DOES 100 GBPS MEAN?

While the technology is advancing rapidly, the fastest commercial Internet providers use fiberoptic cables that enable a network to deliver about 10 gigabits per second. But that capacity must be split up among many consumers in the area, so a residential consumer might actually experience high speed Internet service in the range of 10 megabits per second. A megabit is one thousandth of a gigabit, so that's .01 gbps. In some areas, consumers on a more expensive service plan might get roughly .05 gbps. A 4G cell phone is in roughly the same ballpark of about .01 gbps. The new 100 gbps network connection is therefore able to transmit data among [scientists](#) about 10,000 times faster than your iPhone.

Here's another way to look at it. In the roughly one hour it takes a typical home Internet connection to download an HD movie, the Department's network could download, for example, 20 years of data from the Hubble space telescope.

## ABOUT THE ESNET NETWORK

The new 100 gbps connection is actually an upgrade to the Department's existing Energy Sciences Network (ESnet). ESnet is a national network that connects thousands of DOE researchers at more than 40 different national laboratories and supercomputing facilities, and links them to research partners around the world. ESnet will build on this initial connection to upgrade its entire nationwide network so that it operates at this faster speed. This will include expanding to connect DOE's three supercomputing centers – at Argonne, Oak Ridge, and Lawrence Berkeley National Laboratories – over the next few months. By the end of 2012, ESnet will further expand the network to link all of the DOE national lab sites, enabling them with greater speed, capacity and

services to researchers.

A demonstration of the 100G capabilities is planned for November 12-18, 2011, at the upcoming Super Computing 2011 (SC11) conference in Seattle, Washington.

Provided by DOE/US Department of Energy

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