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HEADLINE: Internet Architect Suggests 'Futures Market' to Avoid Policy Disputes

BODY:

The core Internet function of routing packets has never been a problem -- it's "routing money" that has set up the Internet's intractable policy disputes, an official integral to the Internet's development told a George Mason University Law School audience late Tuesday. David Clark, the chief protocol architect of the Internet until its commercialization and now senior research scientist at MIT, suggested that a "futures market" should be considered for bandwidth that can anticipate demand and allocate costs more efficiently than today. Clark is working on a National Science Foundation project called Future Internet Design that's looking at ways to mitigate current problems through a revamped Internet 15 years ahead.

"The network is not neutral and never has been," Clark said, dismissing as "happy little bunny rabbit dreams" the assumptions of net neutrality supporters that there was once a "Garden of Eden" for the Internet. NSFnet, an early part of the Internet backbone, gave priority to interactive traffic, he said: "You've got to discriminate between good blocking and bad blocking."

Interconnection agreements between network operators work pretty well, but they're haphazard and fluid -- showing the difficulty of regulating them, Clark said. He said an Akamai official told him privately that the company, which basically acts as an ISP, sometimes convinced ISPs to pay Akamai for access to its content delivery network. If that fails, Akamai proposes revenue-neutral exchange of traffic -- and if that fails, Akamai sometimes will pay the ISP for connection rights. It's the only business where it's not clear which party is supposed to pay the other, Clark said.

Pricing isn't cut-and-dried either when it comes to the actual delivery of bits over a network, Clark said. Comcast's slowing of BitTorrent traffic was indeed an "attack," because the company used deceptive packets to interrupt connections, but the company had reasons to be worried about traffic spikes, he said. Aside from the cable infrastructure, which is expensive to maintain, a large ISP probably spends 5 to 10 cents per gigabyte delivered, Clark said. That's 50 cents to a dollar for the average user per month. That's not the no-cost incremental usage that neutrality supporters claim, but it's nonetheless cheap, especially considering that a cable company will spend billions of dollars in programming fees every year, he said. The situation is more dire for smaller ISPs, especially wireless providers, for whom the per-gigabyte cost could be as high as \$1, he said.

Streaming a standard-definition movie over broadband, to say nothing of HD, will likely consume as much bandwidth as a full month of average Web use, he said. And with Internet delivery cheaper than postage, companies like Netflix have an incentive to make more movies available online, Clark said. Comcast's 250 GB bandwidth cap likely wasn't instituted to save any money on current customers, who will never reach it, but to get subscribers comfortable with future "usage tiers," Clark said. "Pure flat-rate is not going to continue to succeed." The best that technologists and policymakers can do is to identify "clearly unacceptable behaviors," and "slowly but surely we'll work down this gray area" of acceptable management.

Investors don't want to pour money into "this open- platform crap" -- a competitive commodity business with high up-front costs and little control over the network, Clark said. The next step in Internet connectivity could be virtualized routers and facilities, similar to virtualized servers, on top of which ISPs can compete for customers -- but it's just as unattractive to investors, he said. Setting up a futures market for bandwidth, similar to how undersea cables are financed, could make such virtualization cost- efficient, he said. Providers would buy "indefeasible rights of use" from those building the underlying networks, so that investment would have some tie to actual demand for services. The alternative ways for expanding competition -- unbundling and public-sector investment -- have largely failed, at least in the U.S., he said.

In the absence of actually seeing interconnection deals, which historically are under non-disclosure agreements, it's difficult to decide what's unacceptable network management, Clark said. "The egregious practices for the moment have all gone into hiding" following Comcast's blunder with BitTorrent. As consumers find ways to peer into the actual performance of their network -- through Google's new Measurement Lab (CD Jan 29 p12), or Ofcom's deployment of measurement devices to thousands of U.K. homes -- ISPs will be kept in line, Clark said, dubbing such oversight "the Consumer Reports kind of experience." -- Greg Piper

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