

Network Neutrality

Should ISPs be allowed to charge the senders as well as the recipients of web traffic?

Today, ISPs charge their customer – the person who is getting stuff delivered to them – and the charge reflects bandwidth.

The ISPs would like to charge the other end of the conversation as well – the senders of video or music, for example, saying that this compensates for providing higher throughput.

What's the current issue?

Congress is considering legislation – commonly called “network neutrality” - which would prohibit ISPs from charging senders and discriminating against the packets of those who don't pay.

Lobbyists on one side: Google, Yahoo, Consumer Federation of America, Public Knowledge

On the other side: BellSouth, AT&T, Verizon.

Logically, the cable companies (Comcast, for example) should be on the telco side, but have kept quiet in public.

The phone companies say

If we can, for example, charge Apple five or ten cents every time somebody downloads a song from iTunes (a suggestion by BellSouth), we can use that revenue to build bigger and faster networks. It's just like airlines offering first class seats or the Post Office offering Express Mail: it doesn't hurt the regular service.

They also point out that they are the ones calling for less regulation: their position is "hands off the Internet".

And they suggest that in the absence of prioritization you might have a 911 call delayed because a child was downloading a ringtone.

The other side says

This will chill innovation: the phone companies will give priority to packets from their preferred partners, and they will slow down other packets.

Customers already pay for access to the Internet; why should packets be paid for again?

New startups won't be able to buy preferred service, and so they will have a harder time competing with larger companies.

Background: natural monopoly

If there are large economies of scale in a business (serving many customers is much cheaper, per customer, than serving a few) then the business is a “natural monopoly”.

Cutting hair, for example, is not: cost per customer is pretty well constant.

Electric power distribution is: it's much easier to add one customer than to string a new set of wires around the town.

Legal history of telephony

Several times in the 20th century the government tried to break up AT&T, typically trying to get it out of the manufacturing business.

In 1913 AT&T settled with the government: they could keep the existing business, but they wouldn't increase their share of the market. (They already owned most of what they wanted; their view of the biggest gap was Rochester, not Southern California).

In 1956 AT&T agreed to restrict its activities to communications and to license its patents.

In 1974 another antitrust suit was filed, but when the Reagan administration started a new Attorney General for Antitrust decided that long distance telephony was not a natural monopoly.

Other telephone arrangements

The U. S. was unusual in that the telephone service companies owned manufacturing companies; AT&T had Western Electric and GT&E had Automatic Electric. In Europe, it was common for the postal system to provide telephone service but for the manufacturing to be done by separate companies (Ericsson, Siemens, Plessey-Ferguson, ...)

On the other hand in the days of steam railways the European companies often made their own equipment while in the US the manufacture of locomotives was done by separate companies, Alco, Baldwin, and Lima (and I do know that Norfolk & Western and a few other companies were exceptions).

Is long distance a monopoly?

Since a single light fiber can carry thousands or even hundreds of thousands of conversations, it would seem that it is a monopoly, but the conservative economists, who don't like regulation, pointed to the fact that there are multiple long distance cables between any two major cities.

And so we got a new organization of the "Baby Bells" and separate long distance companies. But life was confusing because AT&T was regulated and the others were not.

This introduced many years in which the main goal of telecom companies was favorable regulation rather than technological innovation.

Broadband

Typically each customer has a choice of two broadband offerings: DSL (digital subscriber loop) from the telephone company and a cable modem from the cable television company.

This isn't quite a monopoly: it's a duopoly.

Both kinds of companies are struggling somewhat: the landline phone companies as people switch to cellphones and the cable companies in face of competition from satellite TV.

So getting more revenue from the Internet is now important.

Horror stories

2004: North Carolina ISP Madison River blocked DSL customers from using any other Web-based phone service.

2005: Telus (previously Bell Canada) blocked customers from visiting a union web site during a labor dispute.

Shaw (Canadian telecom & cable company) downgrades the "quality and reliability" of competing Internet-phone services.

2006: Time Warner's AOL blocked all emails that mentioned www.dearaol.com – a website against AOL's pay-for-e-mail plan.

[All from "savetheinternet.com"]

Internet charging

Consumers pay their ISP for a connection that lets them communicate over the Web.

Similarly, the big websites pay for their connections.

According to AEAnet, residences pay about \$24B yearly for Internet connectivity, and businesses pay about \$13B.

So if the business connections don't pay their fair share, why don't the internet companies just raise their rates?

Charging senders (1)

Although there's a duopoly going to the residential customers, there is a lot of competition going to the big businesses. Google has considerable freedom where to locate its facilities and to bargain with different carriers to accept its packets.

So if Verizon and AT&T want/need more money to expand facilities, but don't want the political opprobrium of raising residential rates, one possibility is to charge the senders of packets going to a residence. They don't have the option of raising rates for Google

Charging senders (2)

Different kinds of net traffic make widely different demands on the Internet. Video and voice traffic need not just higher bandwidth than text, but they need minimum latency guarantees. A slip of even a few milliseconds in voice transmission produces notably quality loss. If the network is going to need to be engineered for a new service level, it seems fair to charge those who need it.

You could try to charge residential customers more while they access YouTube or Vonage than when they access Google, but that's going to be difficult when most of them are on flat-rate contracts.

Phrasing the issue

If you describe the problem as

“your 911 call might be delayed because a teenager is flooding the network with YouTube”

it sounds different than if you describe the problem as

“if you start a new internet business, you have to pay extra to Verizon or your customers will find your packets too slow and go elsewhere”

Or, at more political levels “democracy!” vs. “no regulation!”

What's the public balance?

A current (Oct 2006) search on “network neutrality” on Google produces 10 sponsored links, of which 3 are pro-telco and 7 are pro-network neutrality.

My guess is that the telcos lose the public argument, but they have a lot of lobbying power in Washington. They have a lot of employees, they are well organized, and they spent a lot of money on lobbying. Until late in the Clinton administration the dot-coms paid no attention to Washington.

My guess

I don't think we'll see extra charges on the service providers. There is enough unused fiber in the ground that I suspect the need for additional bandwidth can be met reasonably easily.

Coupled with the populist appeal of “network neutrality” I believe that even though Congress may not manage to pass a law, the broadband suppliers will be blocked at the FCC or will decide that they can't take the public heat of charging extra.

And I do believe the old saying “If some one says it's not about the money, it's about the money”.