

[alpha draft – still adding to this]

Understanding Net Neutrality as a Pricing Rule

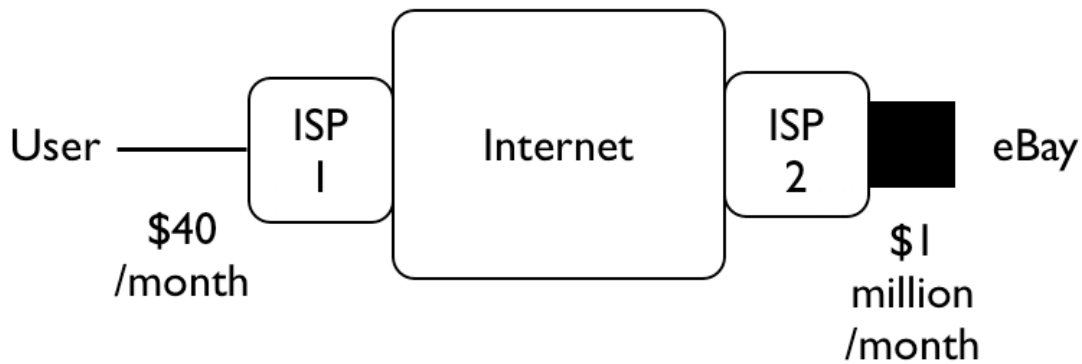
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One very useful way to understand the issue of network neutrality as a pricing issue. I am not the first to point this out.¹ However, here I hope to concisely and simply explain what that means, and see how it can help answer a few questions.

The Internet's own Bill & Keep

The Internet, as it has evolved, has a “bill and keep” system.² That is to say it is typical for dialup and broadband ISPs to bill their customers, and only their customers, for access to the internet. Consider the diagram below. You might pay \$40 / month for Internet access. eBay, meanwhile, might be paying \$1 million for its internet access. As in a bill and keep system, the ISPs bill their own customers, and keep the money.

Figure 1: Billing on Today's Internet



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¹ For the best introduction to and discussion of this issue, see [Anonymous Author], Neighbor Billing, *Jurimetrics* (forthcoming 2007). The idea is also reflected in Lawrence Lessig and Robert W. McChesney No Tolls on The Internet, *Washington Post*, Thursday, June 8, 2006; Page A23.

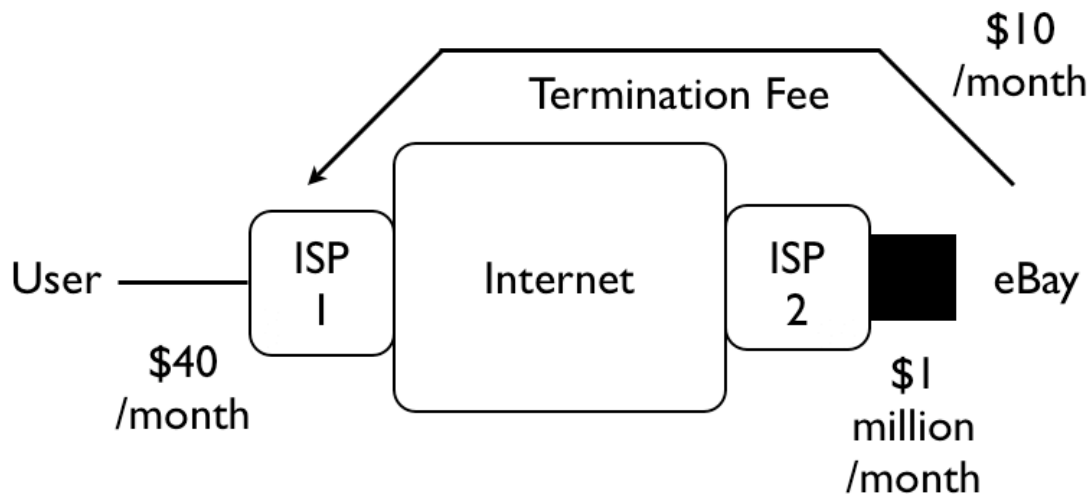
² For more on bill and keep, see Patrick DeGraba, Bill and Keep and the Central Office, OPP Working Paper No. 33 (2000); Jay Atkinson & Christopher Barnekov, A Competitively Neutral Approach to Network Interconnection, OPP Working Paper No. 34 (2000).

What is notable is the lack of termination fees, or fees charged to reach customers. That is, your ISP, ISP1, doesn't charge eBay an additional fee to reach you. Similarly, eBay's ISP, ISP2, doesn't charge you any money to reach eBay.

Viewed from this perspective, much of the current network neutrality debate can be cast as a debate over termination fees. The "priority-lane" proposals advanced by AT&T and others³ can be understood as proposals to begin charging a fee, not for transport, but *to reach their customers*.

That charging such a fee is possible as a matter of technology and economic power is clear. In our diagram above, in order to reach you, eBay *must* go through ISP1. In telecom jargon, ISP1 has a "termination monopoly" over you. Provided eBay wants to reach you, it would have to pay the termination charge ISP1 wants to charge. The diagram below shows this.

Figure 2: Proposed Termination Fees



What is the effect of charging termination fees? It forces parties other than the local ISP to charge customers for the price of his or her connection. Stated otherwise, serves as a means for carriers to hide the price of their services from consumer, or to force other entities to charge the price for the connection.

³ Interview with AT&T CEO Ed Whitacre, *BusinessWeek Online* (Nov 7, 2005) available at http://www.businessweek.com/magazine/content/05_45/b3958092.htm?campaign_id=search.

Consider our hypothetical above. If eBay is charged \$10 a month in termination charges to reach you, the consumer, eBay has two choices. It can discontinue doing business, or it can pass those costs back to the consumer. eBay would, realistically, raise its prices on auctions to cover the new termination charges. It is sometimes said that this saves consumers money, but of course the consumer pays for the connection in the end. The question is simply who she pays, and what transfers and effected in the meantime. In other words, termination fees make the user's connection seem cheaper, but make everything on the internet seem more expensive. Whether that is a good or bad thing we consider next.

Analysis

The advantage of a termination fee scheme to a carrier are obvious. It allows the carrier to maintain a low price, while forcing other parties to extract the full payment for internet service from the consumer. In a world of zero transactions cost and perfect information, this behavior might be seen as ambiguous or irrelevant, since the consumer might pay the same in the end (\$40)—there are just a series of transactions to get there. Unfortunately the real world has transactions costs and imperfect information, and as we shall see they make a difference.

The best that can be said about the charging of termination fees would allow consumers to feel that internet access is cheap, and potentially more people would then subscribe to broadband. Termination fees are therefore thought of as one way of trying to get more consumers to subscribe to broadband services, as they make the service appear cheaper.

But since the costs are actually being passed on, as we shall see, consumers would be paying less, but also getting less on the application side. In other words, termination fees create the appearance of cheaper internet access by passing on costs to application firms.

Should we care if the consumer pays for bandwidth indirectly? There are several reasons to think so. One problem is that, as we've already said, the price of the bandwidth is hidden from the relevant decision-maker. The price being extracted is generally invisible to the party who is paying. For that reason his or her decisions may be poor ones.

Allowing termination fees also introduces the possibility of abuse of the termination monopoly. Since a given ISP has a termination monopoly over their customers, the potential for abuse of that monopoly cannot be ignored. And if government decides to regulate the monopoly price (other than setting the price to zero), the usual problems with government price-setting emerge.

Other than charging high prices, a greater concern is the use of the termination monopoly in either strategic or arbitrary ways. In fact, a flat termination fee that applied to all traffic would in most respects be less troubling. But when different termination fees are charged to different content providers who want to reach customers, numerous problems arise.

These are the same concerns that have driven the ban on blocking in the net neutrality debate. First, extraordinary high termination fees may be charged disfavored applications (like VoIP), creating an effective block. Meanwhile, lower fees might be charged affiliated parties, or simply a favored member of a competitive market. In either case the result is a distortion of competition in the application market.

Finally, allowing termination fees creates new barriers to entry. In a termination fee world, a market entrant need, effectively, to buy access to customers in order to start a business. While that isn't unheard of in the "real world" it nonetheless isn't necessary a good thing. The advantage of today's bill and keep system is that market entrants can start their business without having to "buy customers."

The author of *Neighbor Billing* summarizes the problems with allowing termination fees as follows:

"If we let AT&T set its own rates, it will become a gatekeeper to the internet. It can charge preferred companies small fees, and other companies substantial fees. In the alternative, if we require it to charge a set rate, be it fixed or proportional to some metric, whomever sets that rate will distort the market. We might be able to prevent AT&T from controlling the distortion, but there will still be distortion. A last effect on content providers is that, because these distortions and increased barriers to entry are likely to reduce their numbers, there will be fewer content providers around to fight against AT&T."

Conversely, today's *de facto* Internet bill and keep system has numerous advantages. First, consumers pay for what they get (on both ends). One more dollar paid to the ISP is one more dollar available for bandwidth. For that reason, consumers can make rational decisions about how much bandwidth is worth to them. Furthermore, if government wants to subsidize bandwidth rates, it can do so with clear information as to what they actually are.

Second, bill and keep avoids the various transaction costs related to transferring the costs of bandwidth to application providers, who then charge

those costs back to consumers. Instead, the provider of bandwidth charges the consumer directly. In addition, bill and keep avoids any potential abuse of a termination monopoly.

Third but not least, bill and keep provides good conditions for market entry. Small entrants can buy and pay for the bandwidth they need, and expand as time goes on. The importance of that fact to the national economy should not be understated.

Questions – Fedex and More

The termination fee perspective allows us to answer some of the questions that have been raised about net neutrality.

1. If a business like Fedex wants to charge more for priority service, we consider that a good thing. Why is the internet any different?

The answer is that Fedex does not have a termination monopoly. You are Fedex's customer, and it is charging you to deliver a package faster. Fedex is akin to the ISP who offers you more bandwidth for more money.

It is hard to imagine what a termination monopoly would look like in the mail world, but imagine that some firm owned your mailbox, and charged Fedex a fee of \$25 to send you anything. That is the appropriate equivalent to priority lane pricing.

2. It is often said that network neutrality means that Yahoo, Google or eBay “get a free ride,” or are not “paying their share” for the network. Some have gone so far as to say that net neutrality would make the consumer pay for upgrades, as opposed to rich companies like Google.

From the pricing perspective described here, we can see that nearly the opposite is true. Termination fees, as described above, effectively hide prices from consumers: they do not save consumers money, as a group.⁴ First, it should be made clear that however the billing is achieved, consumers (or government) will always pay for upgrades to the network. There is simply no way around that fact. The only question is how much lack of transparency and transaction cost inefficiency is created by the billing practices allowed.

⁴ It is true, and worth mentioning, that where firms need extract fees from consumers, consumers will effectively pay more or less depending on what applications they use. But whether this is good or bad is ambiguous.

The second problem is transparency. As discussed above, the desire to extract termination fees reflects a reluctance on the part of ISPs to price their services directly. A company like AT&T, if it charges termination fees, can keep its apparent prices to the consumer low. However, the more AT&T invests in its network and the more the service actually costs, the more those costs must be passed on to the consumer through increased prices for applications.

A pricing system works better when the consumer is exposed to the actual cost of his conduct. If broadband connections are kept artificially low through termination fees, consumers will raise the prices of everything connected to the internet. That cannot seem an attractive outcome.

An example from outside the internet world may make this clearer. If, for example, the electric company could charge electronics manufacturers to hook up to its network, they would, to make electricity look cheaper, and make appliances more expensive. But there is no particular reason to prefer such indirect pricing mechanisms. And as we've seen above, there are plenty of ways they can cause trouble.

Relevance for Rules or Legislation

All this suggests a slightly different way to phrase network neutrality rules and laws, one reflected by the AT&T merger agreement. Legislation could simply ban charging termination fees to parties who wish to reach a given broadband provider's customers. The language would be simple and its effects, direct.⁵

Conclusion

Examining net neutrality as a pricing issue yield important analytic dividends. This short paper, however, is just an introduction to these issues.

⁵ The paper Neighbor Billing suggests a slightly more detailed rule that allows internet providers to bill only their neighbors. See that paper for more on the approach.