Fiberevolution

Ruminations about broadband (and fiber) pricing

There was a question on LinkedIn yesterday: "Is the Broadband ISP world moving away from all-you-can-eat pricing?" I went to answer, then LinkedIn crashed, and now the question is closed. Never mind, here's my answer anyway.

So first of all, there's a number of misconceptions about current broadband usage and issues that need clarifying before going further:

Misconception number one: why is there a problem?

First of all, flat rate broadband tariffs which are currently the norm in many Western countries emerged in order to drive penetration and acquisition. They were designed as an acquisition tool, to reassure users that they would know exactly how much broadband would cost them at the end of the month no matter how they used it. Since there is theoretically no per usage costs in an IP network architecture (although see caveat below), this was perceived as safe both for the users and the ISPs.

So the issue ISPs currently have is not with flat-rate tariffs per se, it's with what flat-rate tariff was supposed to get you. And what it was supposed to get you was unlimited acces at an advertised bandwidth for you to use as you saw fit. Except that in order to cut costs, ISPs used a couple of slightly devious techniques in the early days that are coming back to haunt them now. Namely that

- they advertised theoretical maximum speeds for DSL based on equipment capacity, but certainly not on real capacity and/or customer specifics (like distance from the MDF)
- they used contention ratios for backhaul and off-net traffic of upwards of 50:1 which meant that if in the theoretical instance that all broadband users would try to access the internet at the same time, they would all only get 1/50th of the advertised bandwidth at best.

Of course, as long as customers were clueless and had simple needs, this was easy to keep up. But strangely enough, users ended up doing what ISPs had been enticing them to do for years: actually use their available bandwidth (and not always legally, but strangely enough that didn't seem to bother ISPs when their pipes were still empty and they were acquiring customers by the bucketload with the promise of free music and movies...)

Misconception number two: who is the problem?

There's this internet meme going around that a skewed Pareto law is the reason for all the ISPs woes, namely that 5% of the users account for 80% of the bandwidth hog (or 10/80, or 5/60...) I haven't read many studies that looked at that phenomenon in detail, but the one I have studied (by Cho in Japan) showed conclusively that while this meme was indeed true, it was also misinterpreted: it is true that a small percentage of users at any given time account for a large amount of usage, but these users are not identical at two different points in time. What this means, is that while the Comcasts of this world may believe that punishing the heavy hitters will solve the problem, what it will do instead is alienate a large proportion of their customer base who at one time or another are heavy hitters.

In other words, everyone is the problem.

Misconception number three: why is this an issue in an IP world ?

The answer to that of course is that the customer-facing world may be IP, but the wholesale world that undelies it is not necessarily. What happens when customers suddenly start asking for the bandwidth they think they have

purchased, is that if you want to serve them, you need more bandwidth at the aggregation level, and more bandwidth off-net (or you accept to degrade quality for all, with likely churn as a consequence). The latter is usually a non-issue - at least between Europe, Asia and the US where it's cheap and widely available. The issue for ISPs is with aggregation, also known as backhaul. Now if an ISP controls its aggregation network (either owning the dark fiber or renting it) that connects its DSLAMs, providing more bandwidth may be costly and slow (it means equipment upgrades, mostly) but it's an investment and it's feasible.

The real issue is if your backhaul is a wholesale offer from another player (usually an incumbent) especially if that offer is metered and/or if you pay by the Gb/s. In the latter case, if you want to improve customer experience you have to pay more. In the former, you're doubly screwed because not only do you pay as your users use, but you can't prevent them from using (collectively) up to the cap that these offers usually feature. In other words, you're selling a flat-rate retail offer over a metered wholesale offer, which frankly was a bad idea in the first place. That's kind of what's happening in the UK right now.

So that being said, **how is broadband pricing going to evolve**.

First of all, metered for broadband is dead as a dodo. People simply do not want the uncertainty of metered, and there's been too many horror stories in the news about people faced with thousands of dollars of bills because of absurd metered schemes (there's one right now about an £11.000 bill for downloading four episodes of Friends on a mobile...) If they have an alternative, they will use it. And that's true of the semi-flat capped offers too: it will only take one competitor to go fully flat to shift the market in an instant, and I suspect the only reason some countries like Australia have all capped offers is because the wholesale offer that they are all using for backhaul is itself metered.

However, and that's my **second point**, that does not mean that there's no way to make heavy users pay more than light users. First of all, things are different now than they used to be. Heavy users who would have happily reverted to being light users a few years ago would no longer be willing to do so. So there's demand. Furthermore, you can offer more services alongside more bandwidth and/or upload-download capacity for these users to sweeten the deal. The key is not to make it variable. It has to be a fixed rate. My suggestion would be tiered pricing, with each higher tier opening up other options, like the possibility of lower latency (for gamers), more guaranteed QoS, or various other "technical" options that would appeal to more savvy users. Say you keep it simple and have:

- for 40 EUR/month your bog-standard unlimited access with a high cap on download or upload and the option to either lower bandwidth considerable (say down to 512k) if you hit the cap or pay one shot to go above
- for 50 EUR/month you have an unlimited access with a higher cap and a number of technical options, tweakings that the user can access on his service, partner offers, whayever.
- for 60 EUR/month you have the premium "you're a mean hacker" offer that is truly unlimited with all options accessible, etc.

The thing is the differentiation is not on bandwidth, it's on caps and services. I'm pretty sure such a model would work provided you have a disruption on the market that allows you to change the way things are done (you don't want to be the one to make heavy users on your network suddenly pay more unless you provide them with extremely hot additional services...) FttH could be such a disruption though... just saying.

The **third and last point** is slightly more complex to implement from a marketing point of view but it's an interesting one. And to give Caesar his due, this came up in an exchange with **Brough Turner** in January in Boston, and I'm only expressing here something he suggested to me. If P2P is the culprit, as it seems to be, there's one thing you can count on it's that any pricing scheme you implement that penalises certain uses of P2P will be

taken into account in the next releases of whatever P2P client is hot that month. In other words, whether they know it or not, your customers will adapt to your pricing schemes.

Therefore, if you reflect some of your costs in your prices, customers who use these clients will try and avoid the "high-cost" areas, which is in your interest. Pricing scheme as a deterrent rather than an additional revenue generator. What Brough suggested was a pricing scheme that was unlimited for on-net and metered for off-net traffic.

Say you download Piaf to see what the fuss about Marion Cotillard is all about using Bit Torrent. With current pricing schemes, your Bit Torrent client will indiscriminately find users on or off-net to download bits of it. If an ISP launched a differentiated pricing scheme where on and off-net were treated differently (and off-net cost you more, one way or another) you can be pretty sure that a Bit Torrent client that allowed you to favour on-net as opposed to off-net would see the light a day in a matter of weeks.

The impact for the ISP would be immediately more on-net traffic (that costs nothing if his network architecture is sound) and less off-net which costs money.

And now you're going to say "but you said metered was dead". You're right. That's slightly paradoxical. I'm not saying it should necessarily be an on-net=flat and off-net=metered, but I am saying they should be differentiated, and off-net should be more penalising to the user if you want the desired effect. And I do acknowledge that it raises marketing issues, as in "how the hell do you explain that to Mrs. Average Customer".

I'll let you sort that one out. It's late here and I've rambled on for too long. And as for fiber pricing, it's a more complex issue that latches onto this one, but I'll keep that for another day!

Before I jump in bed though, when I broached this last pricing idea to wonderfully-hatted-diamond-subscriber Magnus last week, he said that he'd heard of broadband offers in Iceland priced using similar principals, mainly because from Iceland, any traffic to elsewhere is bloody expensive. If any of my readers can point me to any details on said Icelandic offers (hopefully in a language not too reminiscent of XIIth century sagas) they will instantly gain the status of platinum-subscribers with all associated privileges!

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Comments

Benoit, thanks for this very accurate analysis.

Let me add a few points on the on-net vs off-net traffic idea. When I was a student in Milan 3-4 years ago I had a FTTH connection from Fastweb. There were several P2P users communities creating servers on the Fastweb network and tweaking P2P clients to exploit the very fast on-net speeds (while off-net P2P was pretty poor for network design reasons). Some of these communities asked for some kind of official endorsement from Fastweb, claiming that they were making the provider's interest in increasing value for end-users, but they have always been ignored.

This is just an example to say that there could be ways to push users towards an increased usage of on-net traffic that do not necessarily go through metered services. Metered pricing raises a number of transparency issue if not well implemented, simply because is it difficult for the average user to track its effective bandwith usage. Since the iPlayer launch here in the UK

there is widespread anedoctal evidence of users exceeding their usage caps without realizing it.

ISPs will have a hard life in trying to reflect their cost base in the tariffs offered to end users. A solid network architecture and the right marketing approach are needed to cope with saturating and heavy competitive markets in which end-users become more and more demanding.

Posted by: Marco | March 07, 2008 at 12:24 PM
Benoit, thank you!

The idea of P2P clients favoring local peers over remote peers also shows up in Hong Kong where one monthly fee gets you a bundle that includes high speeds for local connections and a lower speed for "overseas" connections, for example 100 Mbps local and 20 Mbps overseas. But those are advertised rates. Overseas speeds can be much lower.

Supposedly this has resulted in various local peering strategies, but don't have a good URL to point to, at least at the moment. :-(

Posted by: Brough Turner | March 07, 2008 at 07:23 PM
Benoit,

I was preparing slides for a presentation this week on this very topic and thought the content may be interesting for OECD countries.

1. Bit caps have appeared in 20 of the 30 OECD countries and that number is growing.

2. The average bitcap size is 21 GB of traffic per month. (DSL = 16, Cable = 28, Fibre = 85 and wireless = 14).

3. There are no caps among the offers surveyed in FI, FR, DE, IT, JP, KR, NL, NO, SE, and the US.

4. All offers had caps in AU, BE, CA, NZ

5. When you hit the cap, 29% of the firms surveyed will drop your speeds to an average of 82 kbit/s for the rest of the month.

6. When you hit the cap, 71% of the firms will instead charge an average of USD 33 per additional GB of traffic.

On that last point, you don't want to download season 1 of "LOST" from iTunes after you've hit your cap. Doing so would cost you an average of USD 330.

Taylor

Posted by: Taylor | March 08, 2008 at 11:49 PM
Hi Benoit

As always a pleasure to read your blog.

My view is that the best approach will be to define off-net and on-net SLA's with "all you can eat" pricing. E.g. off-net 10 Mbit/s Committed Information Rate and On-net 100 Mbit/s Peak Information Rate (Best effort). The positive part of this is that end-users don't have to be concerned about the monthly bill. Of course QoS mechanisms must be available in the network.

I suggest that you spend a little time reading the below article by Odlyzko and Leveninson.

Too expensive to meter: The influence of transaction costs in transportation and communication.

http://www.dtc.umn.edu/~odlyzko/doc/metering-expensive-rs.pdf

Regards
Uffe

Posted by: Uffe | March 09, 2008 at 05:41 PM
Benoit,

here's the ADSL prices for Siminn, the incumbent operator in Iceland.

English:
http://www.siminn.co.uk/residential/internet/betterwayinternet/

Icelandic:
http://www.siminn.is/einstaklingar/netid/adsl/

Regards,

Harald.

Posted by: Harald Wium Lie | March 09, 2008 at 09:32 PM

Benoit,

your suggestion for tiered service plans is so evil, words fail me :) Even so, I'll try to have a go.

Connectivity providers should provide undifferentiated bitstream services at explicitly defined bitrates (min. commit, max. burst) or suffer the consequences. Give up your status as common carrier and it's a slippery path ending up in hell.

The crux of the matter is that broadband networks are high fixed cost capital goods. It does not make sense to charge people different prices for something that is a commodity. What does make sense is trying to get as many people as possible to share the costs to drive average costs down and profit margins up.

In a properly designed network there is only one variable cost, off-net transit. This is due to the fact that it is economically unfeasible for everybody with an access network to be a Tier 1 transit provider and the fact that there is some inherent uncertainty to how global traffic growth will develop.

So, as an access network owner you need global transit to complete you connectivity product and thus end up with or choose, depending on your perspective, with variable cost off-net transit due to it being more cost effective that a fixed cost global network.

But, get this, even variable cost off-net transit is fixed cost up to a minimum commit level. Effectively this means that all costs are fixed outside of peak-time. Thus it makes no sense to rate shape or trafic quote subscribers outside of peak hours. You can't put Mbps into the piggy back, use them or loose them. It makes neither technical or economical sense to restrict subscribers to any other than max. burstable when there is free capacity in the network.

Peak hours are a special case due to the fact that this is when any additional variable cost is incurred. The solution is however very simple: (i) choose to share with other users at your chosen contention ratio, pay your flat-rate or (ii) incrementally pay for more min. commit to increase your share of primetime bandwidth.

- Zed

Posted by: Zed | April 06, 2008 at 09:35 PM