

June 2022
Geoff Huston

Content vs Carriage – Who Pays?

There was a common catch cry in the early 1990's that “the Internet must be free!” Some thought this was a policy stance relating to rejection of imposed control over content. Others took this proposition more literally as in “free, like free beer!” It might sound naive today but there was a widespread view at the time that the Internet was able to cast aside conventional economics and operate the Internet infrastructure without charging end users at all!

The Internet is certainly not free, and ultimately the consumer pays. It may be via a direct payment to an ISP for connectivity services, payment to a subscription service, or even indirect payments via an advertising model where the users' profiles are sold to advertisers. One way or another the users of the Internet pay for the Internet. But this does not stop various players in the space jostling for relative advantage, claiming others should be paying more while they pay less. This tension is often reflected between carriage providers and content service providers when they try and figure out who should pay whom and how much.

South Korea experienced an early example of this form of tension between carriage and content.

Back in 2012 the country had some of the best broadband deployments in the world, with high levels of deployment and high speeds. They had achieved megabit per second speeds and were announcing their plans to upscale to gigabit access speeds.

Samsung took the Korean carriers at their word and launched a 4K HDTV streaming service. In response, Korea Telecom (KT) took a dim view of Samsung's actions and instituted a MAC address block within their network that refused packets from Samsung TV units. KT claimed that in retailing a device that actually made use of this broadband infrastructure Samsung was acting unfairly in some fashion, and the consequences were so damaging to KT's broadband network that KT felt it necessary to pull the plug on these devices.

Samsung went to the courts and obtained a court injunction to lift KT's block on their TVs and an associated order for KT and Samsung to enter into arbitration. In due course the temperature of the dispute abated, and all the parties backed down. KT discontinued its block in Samsung equipment, and Samsung dropped its lawsuit. However, there was evidently some residual bad feeling here as Samsung subsequently expressed their desire for the national regulator to convey a "strict warning" to KT over its actions.

"You owe us!"

We can go back even further to early years of the commercial Internet and see a radically different picture to what we have today. At that time, it was the Internet Service Providers (ISPs) who enjoyed a commercial relationship with end users, and it was the emerging world of content that was struggling to find a viable business model.

Here's what was on our minds back in 2001:

This Message is bundled with your Internet Service

The original concept, of a separate and distinct content economy as an overlay on top of the underlying connectivity of the Internet is one that has not been realized so far. Yet, paradoxically, every day tens, if not hundreds, of millions of individuals spend tens, if not hundreds of millions of hours viewing content downloaded from billions of web pages published on the Internet. Most of this content is free to the viewer, and this raises the issue that if all content on the Internet is to remain free of consumer charges, then we are going to have to work out some other way to compensate the original author or creator of the content. We are not quite in that dire position yet, as there is one other consumer relationship in the Internet economy that may be used to sustain a viable content economy. This relationship is the provision of Internet access, where the consumer pays the ISP, or access provider, for access to the Internet. The line of argument here is that without content there would be no demand for Internet access and no access market, and, bearing this in mind, the case is made that the access provider should use some of the access revenue to compensate content providers.

[...]

So the prediction remains that the Internet content market will be a robust and highly valued market. It's just that we've yet to reach that particular reality where this prediction becomes established fact.

<http://www.potaroo.net/ispcol/2001-06/2001-06-content.html>

At that time providing content on the internet was a task requiring a certain level of devotion and faith and little else. Almost everything the content folk had tried in terms of sustaining an Internet-based content economy was failing. Nobody was buying subscription services. Banner ads were widely viewed as an annoyance. The all-important click rate on banner ads was just too low to sustain a rich content industry. Portals and attempts to corral the user, such as the much touted Look Smart of the Internet boom of the preceding years, were now looking distinctly passé and certainly not a revenue opportunity. And efforts to use search engines as advertising platforms were not gaining traction with users. Nothing seemed to be working as a viable content model.

So, content looked for where the money was at the time, and they saw the access service providers, who were billing every customer every month. We heard the strident call from the content providers: "Access is only useful if there is content. Access is essentially reselling our content, but not paying for it. This is theft! You owe us money!"

Yes, that should sound familiar. It's essentially the same argument we are now hearing from the carriage operators, now arguing that there should be a monetary flow in the opposite direction!

Let's turn to South Korea once more:

In October 2021 SK Broadband sued Netflix to obtain a judgement to pay for the carrier's increased cost in bearing the surge traffic loads resulting from Korean users streaming Netflix content. The move comes after a Seoul court said Netflix should reasonably give something in return to the internet service provider for network usage, and multiple South Korean lawmakers have spoken out against content providers who do not pay for network usage despite generating explosive traffic. Yes, this is pretty much the opposite outcome from the earlier 2012 episode.

Netflix evidently does not have a direct Korean network presence to deliver content, and it streams its content from servers in Japan and Hong. Traffic is being streamed across SK's network as a result of the actions of SK users, and if SK Broadband did not constructed an adequate network to handle this volume of traffic then that is a failing on the part of SK Broadband, not Netflix. Netflix has argued that its duty ends with creating content and making it accessible. SK's expenses were incurred while fulfilling its contractual obligations to its users.

This time around the Korean courts have, perhaps predictably, sided with the arguments of the local carriage provider rather than the offshore big tech enterprise.

"No, it's you who owe us!"

Aside from the obvious amusement value, what is there to learn from this volte-face that the industry has managed to achieve in the past decade? What happened?

I suppose that the major shift was a dramatic change in the advertising model, and the best example I can think of to illustrate this comes from Hal Varian, a noted economist in the information space who observed back in 1998 or thereabouts that spam is merely a failure of information about the consumer. If you knew all there was to know about that consumer, then you could ensure that what you sent to the consumer was not unwanted digital detritus but timely and helpful advice!

What content providers started doing a decade ago was intensively scrutinising their users. What web pages did they linger on? What content attracted their interest? What makes a user come back to a content site? What is the user wanting to purchase? Can we help in facilitating this purchase? What could we do for the user that would provide us with even more knowledge about the user's preferences? Would running their mail service provide that depth of information? How about running their document storage system? How about helping them create their documents? All of these online services might be free to the user, but at the same time they are immensely informative services. They provide a rich vein of real time information about each and every user. And it's this stream of personal profile information that can be sold to advertisers as intimate knowledge of a consumer's preferences and interests.

This form of mining of the data exhaust that each user generates in this online environment has proved to be transformational for the content industry. However, this did not start as a battle between the

carriage operators and the content providers over the money. It's been a battle within the content industry itself, where the Internet has been pitted against the historical content behemoths, the newsprint industry. At stake was what was described by Fairfax, a former newspaper publisher in Australia, as the “rivers of gold” At stake was the newspapers' advertising revenue. And the digital content industry has comprehensively won this struggle. The factors of declining readerships, falling advertising revenues, the shrinking pool of journalists, are all visible across most of the print newspaper world. At the same time the stock prices of the hypergiants in the Internet's content factory, such as Google, continue to show an optimistic outlook.

Obviously, the content providers quickly forgot all about their earlier contretemps with the carriage operators, and quickly walked away from their previous strident demands for payment as they turned their attention to a far larger potential revenue stream. The rise in the value of the online market not only stimulated ever greater shifts to online advertising, but also reinvigorated various other forms of sponsorship of content, and even has led to a revival of the content subscription model. Content was now not only a viable industry, but one that appeared to be growing at such a pace that it was looking as though it would soon dwarf the carriage sector in economic terms, which has indeed happened.

While the content world has latched onto a sustainable, and highly lucrative, business model, the carriage world is still largely working with a business model that is creaking and groaning with age.

The model of carriage provision was based on the general concept of statistical multiplexing - not everyone wants to communicate at exactly the same time. What this means is that if you look at an access network as a collection of “tails” that connect to consumer's home networks and a set of internal links that connect the tail concentrators to switching centres, then the internal links do not need to be configured at the same capacity as the sum of all the tails. In the age of DSL it was not uncommon to have 10,000 or more megabit DLS tail loops connected to a concentrator that used a 34Mbps trunk connection back to the network's switching infrastructure. That's a multiplexing concentration factor of 600:1.

The speed of the dedicated access tail link did not really matter in terms of the ISP's cost. What mattered was the amount of traffic that had to be carried within the ISP's network and the average distance of that traffic. Like the road system, it's not even aggregate volumes that count – it's the ability to clear the traffic during peak hours, and at these times the baseline average peak use is a critical metric. As long as this peak use profile does not shift dramatically a flat fee access model is sustainable at the current price point. But of course everything changes, and with the advent of steaming content services such as Netflix, Amazon Prime, Disney and the massive uptake of YouTube, every user is contributing to the peak load at roughly the same time, and the benefits of statistical multiplexing vaporize! The carriage operators complain that they have to beef up their capacity and spend additional money in augmenting carriage infrastructure capacity. But where are the funds to support this work? Where is the business case?

The carriage operators are now trying to make the case that their activity is financially unsustainable, much the same way as the content providers tried to make the same case a couple of decades ago. The carriage operators have been heard to argue that raising retail tariffs for the Internet would be discriminatory for their users. Discriminatory or not, the underlying observation is that having established a price point in the consumer market, it's hard for any single provider to lift their prices without dramatically losing market share, and if all the carriage operators acted in unison the consumer protection agencies and market regulators would tie them up in protracted and expensive proceeding over cartel-like behaviour and abuse of market power. If it's not the user who will pay, then the choices are pretty limited.

It's no surprise that the carriage operators' attention has quickly fixated on where they believe the money is. They have turned their attention to the content industry, eyeing them off as a potential target, and they are now attempting to enlist political support to assist them in their efforts of financial extortion.

Creating structural distortions in the carriage business by imposing a levy on content and passing the proceeds to the carriage providers would be as unwise now as performing the opposite structural cross-subsidy would've been ten years ago.

Not Everywhere, Not All Together

I've been making sweeping generalisations about the nature of the carriage business, and these generalisations have their notable exceptions.

New Zealand is a notable case of getting many aspects of a national broadband network right! Entry level broadband fibre plans are now positioned at 300Mbps up/100Mbps down (which is a higher speed than all the generally available consumer plans in Australia's NBN network!). That's just the entry level service and a New Zealand consumer may opt to up that to a 1Gbps/500Mbps service or a symmetrical 2G, 4G or 8G service on XGSPON).

Of course, the clock speed of the tail loop and the throughput of the delivered service can differ markedly, and the NZ Commerce Commission publishes regular reports on achieved performance. (<https://comcom.govt.nz/regulated-industries/telecommunications/monitoring-the-telecommunications-market/monitoring-new-zealands-broadband/Reports-from-Measuring-Broadband-New-Zealand>). It's not stopping here, and 25G retail access services appear to be coming from one of the broadband suppliers, Chorus.

It appears that in New Zealand the carriage providers are providing a sustainable service that can stream multiple 4K video streams to each subscriber without incurring a catastrophic level of congestion collapse. There is no hint of forcing Netflix to pay, in indeed many of the retail offerings in New Zealand bundle Netflix into the broadband package.

Australia has not been as effective in its broadband deployment, and the saga of deployment of fibre optic cable was savagely derailed with a change of government and political direction to recycle the ageing copper loop infrastructure and use VDSL2 copper tails and a fibre to the kerb model. While the government of the day was keen to take the fight to Big Tech, as was seen in their somewhat ill-conceived effort to respond to the pressure from the Murdoch press and force the content integrators to pay the local news content generators for their content, there has been no visible activity from the domestic carriage industry to mount a comparable extortion campaign to get the content streamers to contribute to the costs of carriage.

At the same time, a number of European carriage providers appear to be adopting the Korean line of argument and putting pressure on the policy makers for measures to force content streamers to pay to have their content streamed to users. Their argument appears to be that these content streaming models have placed undue pressure on the carrier's infrastructure investment models and the carrier is left with the incremental costs of infrastructure upgrades while the content provider is reaping the commercial benefit. (<https://www.etno.eu/news/all-news/8-news/742-8-questions-fair-contribution.html>)

These representations relating to the supposed parasitic activities of big tech enterprises appear to have struck a sympathetic chord at the EU and in May the EU's Commissioner for Competition, Margrethe Vestager, noted a need to consider the broader issue of a "fair contribution to telecommunications networks." A study released by ETNO at the time noted that the "big 5" (Alphabet, Facebook, Netflix, Apple, Amazon and Microsoft) collectively accounted for more than 56% of all Over the TOP (OTT) network traffic, and are implying that they have not contributed their "fair share" of the costs of infrastructure to handle that volume of traffic.

Be careful what you ask for

But would such a move to force these tech giants to pay necessarily create beneficial outcomes?

If the larger tech companies can effectively purchase a preferred position within the carriage regime what is left of the essential concepts of network neutrality and lower barriers for competitive entrants? At what

point would the interests of the large carriage providers and the largest of the content providers converge and thereby create an even larger monolithic cartel right at the core of the digital environment? If it's already challenging to deal with the digital behemoths in our world, how much harder could it get if they literally swallowed up the entire carriage sector?

Passing the entire body of the public communications sector into the hands of the private sector has been a mixed blessing. Deregulation has certainly dismantled the gouging and bloated monopoly of the telephone companies and unleashed a wave of new digital services that have been far more cost effective and far more versatile. But at the same time, we've created a new collection of digital enterprises that are de facto monopolies in their chosen activity sectors. The difference is that these new giants are trans-national and pose major challenges to various national regulatory regimes.

The questions I can't help but ask myself is: How has New Zealand been able to create a high performance digital broadband infrastructure that is able to meet and often exceed consumer expectations in terms of price and performance? And at the same time why are we hearing tales of despair from ETNO in Europe that some major carriage operators are claiming that they are finding further investment in broadband infrastructure so challenging?

The way in which New Zealand divested itself of the public telephone company, while retaining a level of public interest in the basic provision of broadband infrastructure is perhaps a major factor here. The use of public sector funds as seed capital offsets some of the issues that are experienced in fully privatised communications enterprises. The problem is that capital intensive infrastructure operations tend to have low rates of return, and most operators would prefer to invest their capital into activities that offer a far higher rate of financial return. Mobile services, for example, have generally been seen as being a more attractive investment, while broadband cable infrastructure tend to be a far more mundane option. The experience in both the Australian and New Zealand markets has been that in relieving some of these infrastructure capital investment pressures from the private sector, the result of this form of public sector engagement has been one that appears to be a more responsive and capable carriage sector that is better positioned to keep pace of the evolving broadband requirements of the user base.

Disclaimer

The above views do not necessarily represent the views or positions of the Asia Pacific Network Information Centre.

Author

Geoff Huston AM, B.Sc., M.Sc., is the Chief Scientist at APNIC, the Regional Internet Registry serving the Asia Pacific region.

www.potaroo.net