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RIP Network Neutrality?

It's been an interesting couple of months in the ongoing tensions between Internet carriage and content service providers, particularly in the United States. The previous confident assertion was that the network neutrality regulatory measures in that country had capably addressed these tensions. While the demands of the content industry continue to escalate as the Internet rapidly expands into video content streaming models, we are seeing a certain level of reluctance from the carriage providers to continually accommodate these expanding demands within their networks through ongoing upgrades of their own capacity without any impost on the content provider. The veneer of network neutrality is cracking under the pressure, and the arrangements that attempted to isolate content from carriage appear to be failing. What's going on this extended saga about the tensions between carriage and content?

Verizon vs the FCC

In the United States in January 2014, the U.S. Court of Appeals sent the regulatory framework of what is commonly referred to as "network neutrality" back to the US Federal Communications Commission (FCC), claiming that the Commission had overreached its authority in barring broadband network service providers from slowing or blocking selected content. In other words the court was saying that the framework that was intended to ensure that these carriers treated all content on an equal and non-discriminatory basis was beyond the authority of the FCC in this context. This stems from an earlier move by the FCC almost two decades ago, in 1996, that elected not to classify Broadband Internet Access Service providers as recognized Common Carriers, and instead classified these service providers as "Information Service Providers". It may have been an administrative convenience at the time, but the full extent of the consequences of this administrative action are only now emerging. The US Court of Appeals has ruled that as these providers are, strictly speaking, not common carriers then the US Communications Act expressly forbids the FCC from regulating these providers as if they were common carriers. So for the Internet in the US the concept of network neutrality may well be over.

In theory, the FCC could remedy this by appealing the Court decision, but it has been reported in March 2014 that the FCC will not appeal this decision. Another form of remedy would be for the FCC to reclassify these service providers as common carriers, but, predictably, this is not as straightforward as it sounds, as many of the larger US Internet service providers appear to be somewhat resistant to such a move as it appears to imply a number of additional constraints imposed on these providers. Why would a carrier not see an advantage in the protections offered by the common carrier framework? Perhaps part of the answer lies in the increased regulatory oversight of such carriers in many regimes, including elements of regulatory control over retail tariffs, and it could well be the case that the regulatory constraints in the common carrier role may act as an inhibitory factor for further private capital investment in carriage services. Perhaps this is another example of the adage that whatever the question may be, the answer is "money".

This situation evokes a memory of the issues in the US in the late 1970's and early 1980's concerning the apparent de facto monopoly of AT&T over the country's telephone services, and the various legal challenges to this national structure. At the time it appeared that the major elements of national telecommunications policy were being determined by the US courts, as distinct from a deliberative process of telecommunications policy formulation to meet a particular set of social and economic

objectives. If the tensions between content and carriage service providers are not going to abate any time soon, then can we expect to see more intervention from US courts in the future?

AT&T's "Sponsored Data" service

AT&T's experience with their mobile data network has been what one could characterize as a "learning experience". Their initial forays into high speed mobile data services with unlimited data quotas facilitated what appeared to be an overwhelming response of content traffic on their mobile network, particularly with streaming audio and video services. AT&T were placed in the position where the incremental capital investment required in their mobile data network, required in order to augment capacity to track this escalating demand, was an investment that was not necessarily going to generate incremental revenue. The outcome was inevitable: the introduction of data caps on their services, limiting the data volumes that can be consumed in any month, and applying incremental tariffs to the overflow.

However, AT&T have gone a step further with a "sponsored data" service, announced at the start of 2014, which allows a content provider to take on the costs of delivery of content to the user, without the data counting to the user's data cap. One assumes that this is not a flat-rate unlimited service for the "sponsor", and the more users that access this sponsored content, the higher the sponsor's costs.

Positioning this service into a context of a conventional common carriage service is ambiguous. The end users of this data service have presumably executed some form of agreement with the carrier to deliver to them content of their choice, rather than content that is determined by the carriage service provider. Presumably when, or if, the network is undergoing some form of contention overload then this sponsored data would receive preferential treatment, at the expense of other data and other users. This raises the question of whether this carriage service is truly a common carriage service that is equally available and accessible to all. Again, possibly, this is a matter that could head into the legal system and be left again for the courts to resolve.

Comcast and Netflix

In February 2014 Comcast and Netflix announced that they had reached an agreement with the streaming video service provider Netflix, whereby Netflix would pay Comcast for what was reported to be "a more direct route to Comcast's customers". This was seen as a major case where a content provider had caved in to demands for payment from a broadband access provider, and appeared to set a precedent for both other access providers to demand payment from Netflix, and indeed for access providers to demand payment from other streaming services. However, it now appears that Netflix is having some second thoughts, and it's clear that the popular streaming company doesn't want to be forced to cut similar deals in the future. Netflix has subsequently stated that "net neutrality must be defended and strengthened," calling out giants like Comcast and Verizon for bad behavior.

"The essence of net neutrality is that ISPs such as AT&T and Comcast don't restrict, influence, or otherwise meddle with the choices consumers make," Netflix's CEO Reed Hastings writes. "The traditional form of net neutrality which was recently overturned by a Verizon lawsuit is important, but insufficient. This weak net neutrality isn't enough to protect an open, competitive internet; a stronger form of net neutrality is required."

It appears that Netflix is arguing that its precedent-setting actions were in fact not to be interpreted as such. Perhaps its no surprise that Netflix will find it hard going to make this case. Other's have already interpret this arrangement as a template rather than an isolated aberration, and Apple has been reported to be in talks with Comcast about "teaming up" with Comcast to stream live and on-demand video content to Comcast end users with this streaming content being subject to the whims and vagaries of network level congestion. Apple evidently believe that such an arrangement will make Apple's content distribution service and its Apple TV product more attractive to media companies and content owners, and attract more content which in turn will strengthen its retail offering for consumers.

Samsung and Korea Telecom

At times these tensions between carriage and content can spill over into the public arena. In early 2012 in Korea a similar spat emerged between Samsung and Korea Telecom. At that time Korea Telecom (KT) made public its quite surprising move to block Samsung's "Smart TVs" from downloading streaming content over KT's consumer broadband network. In essence, KT's blocking move transformed the Samsung television back into a "dumb" TV, and needless to say neither Samsung, nor the hapless consumers who had purchased these devices to use with a KT broadband connection, were overly impressed.

South Korea is a country that proudly proclaims its effective saturation of its domestic population with high speed broadband access services, and rightly so, as this is a notable achievement. Megabit speeds are common and these days experimental deployments of a gigabit access service are underway in parts of the country. So it's not without some small element of surprise to hear a KT representative claim that Samsung, in retailing a device that actually makes use of this broadband infrastructure is acting "unfairly" in some fashion, and the consequences so "damaging" to KT's network that KT felt it necessary to pull the plug on these devices. Evidently, according to Korea Telecom, Samsung opted to take a "very negative response" to KT's actions. Samsung obtained a court injunction to lift KT's block on their TVs and an associated order for KT and Samsung to enter into arbitration. At the same time Samsung filed a lawsuit against KT. In due course the temperature of the dispute abated and all the parties backed down. KT discontinued its block, and Samsung dropped its lawsuit. However, there was evidently some residual bad feeling here as Samsung expressed their desire for the national regulator to convey a "strict warning" to KT over its actions.

What KT was after is quite simple: they were insisting that Samsung, and other local "Smart TV" vendors in the Korean market, must pay a levy to KT to have their devices deliver their content over KT's broadband access network. Predictably, Samsung officials said in response that they had no intention of paying KT for network access for their devices.

Samsung remains publicly confident that the Korean regulatory position will continue to support its position, but it raises a larger spectre across the generally buoyant Internet consumer content industry. The threat here is that if the incumbent carrier is able to carry out its threat and block these devices from the network unless the manufacturer comes to a prior agreement with the carrier to pay some form of levy, then it would set an unfortunate precedent that would have repercussions across the entire Internet. This contretemps potentially extends way beyond Samsung and KT, and draws in LG and Panasonic and also potentially draws in Microsoft and its Xbox, the Sony Playstation and the Apple TV, to mention some of the more prominent vendors of the current generation of streaming content devices.

Internet Access Business Models

One would've thought that there is a level of co-dependence going on here, and that the relationship between carriage and content could be forged along terms that were not so antagonistic. After all content requires a carriage service for the content to reach the consumer, and the carriage service is somewhat redundant without some form of use model that involves the delivery of desired content to the consumer.

What's gone wrong?

One possible answer lies in the antecedents of the Internet, in the model of tariffing for the telephone service. And, in particular, the tariff model chosen within the United States for local telephone calls. By the early 1980's the domestic US telephone system was relatively unique in that for a fixed monthly tariff consumers could make an unlimited number of calls. Most other national telephone regimes used a tariffed mechanism, charging either a fixed amount per local call, or even a fixed amount per unit of time per local call. While these "unlimited use" telephone accounts looked profligate at first glance,

there was some compelling rationale for their use. The cost of adding usage accounting systems to the phone network, and the issuance of bills with detailed call records, and the incremental cost of resolving the inevitable disputes over the bills would all add to the cost of the service. A fixed cost "all you can eat" model was undoubtedly less expensive to operate, and, as long as the common tariff was low enough, would allow the service to be more accessible. The second observation is that at the time telephone networks were provisioned for peak use periods, which occurred on a small number of days in the year. Even on a daily basis the peak call period lasted a small number of hours. At all other times the marginal cost of supporting a call within the network on otherwise idle capacity was effectively zero. As long as the sum of the income from the flat tariffs levied on all subscribers covered the costs of operating the service across the local call zone, then the local operator was not exposed to any liabilities through overuse of the service. Lastly, there are only 24 hours in the day and a voice service imposes a fixed load on the network. The exposure of the operator to intense use of this "all you can eat" tariff was minimal.

When the first mass market dial-up Internet services gained widespread adoption in the consumer market the service, particularly in the United States, followed the same model. It was a basic "all you can eat" unlimited tariff, costing some \$19.95 per month. Much the same rationale that was used in the world of telephony services was re-used in this context. The incremental costs of supporting the usage of a single dial up service provider was minimal, the level of network capacity was supposedly on a par with the aggregate level of demand that could be imposed by the sum of all dial-up services, and of course the use of a flat fee avoided the messy details of trying to account for network usage where the convenient telephone model of a "call" and a "distance" between two parties to a call had no counterpart.

The move to DSL, cable and initial forays into various forms of fiber access networks in the broadband market, and of course the move to mobile data was accompanied by a consistent use of this flat tariff model, particularly in the United States. Other forms of retail services, such as "capped" services were eschewed by many US access providers, on the basis that they were discriminatory, introduced additional costs or would position their service as being uncompetitive and unwelcome by consumers. But as the aggregate total of the capacity levels in the access network increased, it quickly reached the position where it exceeded the capacity of the infrastructure networks that fed into these retail access networks. As long as users only consumed services in short bursts, as is generally the case with web-based services, then this form of potential over-subscription of the infrastructure service network was masked. So while there was a hypothetical risk that if every consumer elected to operate their Internet access service at wireline speeds then the infrastructure network would be critically congested, this was considered to be a theoretical proposition, and this risk was largely discounted by retail access providers.

However the introduction of streaming services, and in particular the introduction of video streaming services has changed all that. Now it is not only a hypothetical risk, but a very real operational problem that if every consumer simultaneously opens up a high definition video streaming session or two at the same time then the access networks will simply congest, and all users will experience a degraded quality of service.

Who's to blame?

The consumer has been offered a simple flat rate service that operated at a speed that was capable of supporting this form of video streaming service, so its hard to make the case that the consumer is at fault here in using the carriage service for a form of content delivery that it was supposedly capable of supporting.

The content provider is attempting to offer a service to the consumer that leverages off the carriage provider's flat tariff regime. The content provider is not breaching any contracts or provisions, in the same way that when you access a digital copy of this article, I, as the content publisher, don't need to

come to any agreement with your access provider to enable delivery of a copy of this content to you. The video streamers, and the larger content distribution industry, have taken a similar position: if a consumer elects to download or stream a copy of their content, the content provider should not have to execute some agreement (presumably involving payment) with the access provider to have this content delivered to the consumer

The access carriage provider is claiming that the service was not constructed to deliver service within the parameters of the high volume streaming environment. They claim that such use damages the ability of their network to service all their other customers, and that this form of high intensity content should pay some form of additional payment, presumably to allow the network to be augmented in ways that would provide an adequate and usable content streaming service.

Perhaps all these positions sound reasonable, but I can't help but think that the Internet has created a rather strange industry.

In the airline industry, apart from a few notable exceptions (such as American Airline's initial AAirpass, that offered unlimited first class travel on any of the airline's flights for a single price of \$250,000), the more a passenger travels on the airline, the more the passenger pays the carrier. The air carriage service provider appears to have, on the whole, adopted a business model where increased patronage and use of its services increases its revenues, which, hopefully increases its profits which, in theory, incents it to increase its offering. Greater levels of use incents greater levels of supply. However the internet access industry appears to have adopted a retail offering that achieves its greatest reward to the service provider when the consumer does not use the service at all. In this case increased use implies greater cost without any increase in revenue. To deter increased use of their service the service provider is, somewhat perversely, incented to decrease the quality of the service. How strange.

What is a regulator to do?

One approach is to introduce further regulation to further support so-called network neutrality provisions, and force the carriers to look to their consumer tariffs to raise further revenues to underwrite the costs of augmenting their networks. The problem here is that such regulatory intervention often generates unintended distortions in the market, and this can create inefficiencies and costs which, ultimately, are passed back onto the consumer through price increases. For example, the relatively intense levels of regulation in the telephone industry did not appear to result in lower prices to consumers - indeed it is easy to make the case that the ultimate outcome of such significant levels of regulatory imposition was increased cost to the consumer.

The other approach is to remove such regulatory provisions, and allow the market to operate without such constraints. And in the United States this appears to be the emerging position being taken by the FCC.

At the end of April this year it has been reported that the FCC will be proposing revised regulations that would permit carriage providers to levy payments from content providers to provide preferential carriage services to deliver their content. Some commentators see this as the end of the Internet's network neutrality regime, and speculate that this ruling will embolden carriage providers in other counties to demand similar payments from content providers

As the New York Times reported on the 23rd April of this year "The principle that all Internet content should be treated equally as it flows through cables and pipes to consumers looks all but dead." This news article further reported that Tom Wheeler, the F.C.C. chairman, defended the agency's plans, saying speculation that the F.C.C. was "gutting the open Internet rule" is "flat out wrong." Rather, he said, the new rules will provide for net neutrality along the lines of the appeals court's decision.

Where Now?

Obviously this is by no means the final chapter in this story. The Internet is an outcome of the progressive deregulation of that behemoth of the twentieth century, the telephony company, and we've witnessed a massive shift in value within the communications industry from carriage into content as a side effect of the progressive dismantling of the vertical bundling of content and services with the underlying carriage service. But the rapid growth of the content world appears to have starved much of the carriage world of access to infrastructure capital. Much of the Internet still runs across various forms of copper infrastructure, and the investment models that would see this aging infrastructure replaced with fiber have yet to gain widespread traction. The historic public investment models that deployed the telephone network's copper pairs appear to have no counterpart in today's world, and the private operators of the existing infrastructure appear to have insufficient incentive to perform wide scale replacement of this infrastructure.

While the economic benefits of a highly capable and ubiquitous network infrastructure are clearly evident, the existing industry structures appear to be locked in a mode of exploiting existing infrastructure, and lack the necessary incentives to adapt and improve this infrastructure to meet emerging demands. The issues around network neutrality and the tensions about who owes who and how much between content and carriage are perhaps superficial manifestations of a more fundamental issue about public and private roles in the provision and maintenance of common infrastructure. In that respect the Internet appears to be little different from the same debate about public roads and private tollways, about public and private education and health services and similar.

Perhaps it really is the case that the Internet has come of age. It's actually not very special any more, and we are seeing the same issues emerge in this space as we see in other industries. And no doubt the measures we adopt in response to these issues around the evolution of service roles in the Internet will also be along similar lines as those we use in other areas of common infrastructure services. And perhaps that's about the best outcome we can realistically expect.

Disclaimer

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