

***In re* Petition to the Governor in Council to Vary**

Telecom

Regulatory Policy CRTC 2015-326

Review of

wholesale wireline services and associated policies

Comments by the Internet Society of Canada

The Internet Society of Canada is pleased to submit the following comments and observations on the issues raised by Bell Canada's petition to the Governor in Council in relation to the CRTC's regulatory policy 2015-326.

Who we are

The Internet Society, Canada Chapter (www.internetsociety.ca) is a branch of a world-wide organization, the Internet Society (www.isoc.org). The Canadian branch is wholly responsible for this intervention in the petition of Bell Canada to the Governor in Council. All relevant details of the organization, its board of directors, by-laws, and activities can be found at the website www.internetsociety.ca.

The Board of the Canadian Chapter has had significant experience in matters related to the Internet: domain names, IP addressing policy, international internet institutions such as ICANN, the American Registry of Internet Numbers (www.arin.net) the Canadian Internet Registration Authority (www.cira.ca), and comparable bodies. Some of its Board members have been active for decades in seeking access to telecommunications facilities for Internet Service Providers (ISPs), and one has been a Commissioner of the CRTC. This intervention is not a rehash of the arguments of other ISPs; it seeks to convey an approach to telecommunications carrier issues grounded in Internet-style thinking. We are familiar with the issues around consumer access to facilities and with the arguments carriers make to the effect that carrier interests ought to prevail for the public good. We are skeptical of them, and will seek to persuade you why this skepticism is well-founded.

Why are we commenting?

The Internet Society, Canada Chapter seeks to advance the interests of Internet users in Canada through access to plentiful bandwidth, made available across the nation, through policies that encourage use and restrict censorship, and which limit the interventions of private actors or of governments to reasonable limits.

The Internet Society, Canada Chapter believes that the Internet is for everyone. How people get to the Internet, and at what prices and bandwidth speeds, is enormously important. Accordingly, we judge telecommunications policies by their effect on the speed, bandwidth, and terms of use that people experience in using it.

These terms of use can be set by governments or by private industry. Governments concern themselves, for instance, with spam, child pornography, terrorism and other forms of crime. Private industry affects Internet usage by terms of privacy, or by a host of technical factors. Carriers exercise important influences on what people can do with networks, such as for instance

in those issues falling under “net neutrality”. The term “net neutrality” conveys the idea that carriers should be neutral among uses and users, and to this end Canada has had effective rules since 2009¹ that balance the rights of carriers to defend their networks from malicious technical attacks with the rights of users to the neutral handling of traffic.

In answer then to the question, why the Internet Society is commenting, we think our perspective will assist policy makers to think about the question of wholesale access from the point of view of end users, consistent with what makes the Internet the runaway success it is.

Why is Bell appealing the decision? And why now?

That Bell has appealed the decision of the CRTC at this point is, from our perspective, premature. Why? Because the wholesale prices on which they would be basing their complaint have not been decided upon.

By appealing now they are saying in effect: there is no wholesale price at which they can make a reasonable profit sufficient to induce them to invest in facilities. None whatever. They must absolutely have every cent of revenue to be derived from the end user, even if a smaller and more nimble supplier can deliver traffic to their network more cheaply than Bell can do so for itself. Every carrier needs to fill his pipes with traffic; that is the nature of the business. Suppose for instance that, at the end of proceeding to establish wholesale rates, that a wholesale rate was set at \$x/unit of traffic and Bell’s retail price was going to be \$x/unit of traffic plus 15% more. Accordingly, the retailers who lease Bell’s facilities in bulk have to market, manage, and turn a profit on a margin of between Bell’s wholesale and retail prices.

If they could do so, the competitor would be filling Bell’s pipes with traffic and somehow making a profit on a hypothetical margin above Bell’s wholesale rate and below Bell’s retail price.

Bell asserts, by its decision to appeal the decision even before wholesale rates have been set, that there is no wholesale price whatever that would not disincent them to pursue significant broadband investments, and that wholesale access to their facilities should not be available *even in principle*. This does not sound plausible on its face. If a reseller can fill a carrier’s pipes for cheaper than he could do it himself, as every reseller must do to remain in business, then by normal economic criteria everyone gains. Adam Smith called it the division of labour, but in telecommunications policy it seems to be a suspect concept. Why then is Bell appealing?

¹ <http://www.crtc.gc.ca/eng/archive/2009/2009-657.htm>

Two reasons suggest themselves. One is that the one year time limit² to appeal the CRTC's decision to the Governor in Council would expire before wholesale rates could be set. The second is that Bell wants to persuade the new government of arguments that the old government considered and never accepted. After all, why not give it a try? Maybe Bell can roll the new team by talking about markets and innovation while in fact seeking to control both.

Clearing up some misconceptions

The essential premise of Bell's argument is that the relevant form of competition must be between networks. The carrier must absolutely own the whole of its network and not be obliged to share it – on any conceivable terms – with other entities.

Competition of this nature is said to be “facilities-based”. It conjures an image of heroic competition between capital intensive giants slugging it out manfully for market share.

To the Internet Society, such a view of competition is predicated on completely pre-Internet ideas. “Facilities-based competition” is a term that predates the explosion of consumer interest in the Internet that followed the development of the world wide web by Tim Berners-Lee in 1989 and the subsequent adoption of web browsers, in the mid-1990s³. The term “facilities-based” competition derives from a world in which voice telephony was the only relevant game, and when competition in long distance telephone service was finally introduced in Canada, in 1992⁴, it was thought that different and competing physical networks would provide more effective competition than by merely resale and sharing.

There was, at that period, no public internet, and competition was confined to a couple of services, long distance voice and data telecommunications. Yet the idea persists – or continues to be propagated - that real and effective competition can only be provided by rival silos of end-to-end carriers.

Prior to the Internet was an era when there were two distinct types of network, each optimized to do a different function, with strictly limited capacity to be flexible.

There was a telephone network, optimized around the characteristics of the human voice, and human usage, such as duration of calls, distances of calls, times of day, and bandwidth required to accommodate those patterns. It was two-way, it was technologically not open to innovation, and it demanded a high degree of central coordination to make it work properly.⁵

² Section 12, Telecommunications Act, <http://laws-lois.justice.gc.ca/eng/acts/t-3.4/page-4.html#docCont>

³ [A History of the Internet and the Digital Future, by Johnny Ryan](#) , Reaktion Books, 2000, pages 107 and following.

⁴ <http://www.crtc.gc.ca/eng/archive/1992/dt92-12.htm>

⁵ The Stupid Network, by David Isenberg, which compares the “intelligent network” of the phone system, to the Internet, captures these features eloquently. See *Computer Telephony*, August 1997, pp. 16-26 and on the web at <http://www.rageboy.com/stupidnet.html> or <http://www.hyperorg.com/misc/stupidnet.html>

There was also the cable network, which paralleled the over-the-air broadcasting system in being one-to-many (unidirectional), entirely devoted to augmenting the areas of service of licensed broadcasters. The only reason that it came into being was that the telephone system was not then capable of transmitting television signals. It grew up under a different regulatory regime, the Broadcasting Act, as opposed to the regime that governs telecommunications, the Telecommunications Act.

This was the situation as recently as 20 years ago.

Two things have changed the situation entirely: Moore's Law⁶ – which stands for regular geometric increases in speeds and computing power, and the Internet – which has remade communications systems. The impact of Moore's Law has been experienced in the price/performance of our computers, so that a hand held device now outperforms a million dollar super-computer of the 1980s. This is a change we readily understand.

By contrast, the nature of the Internet has not been taken into account in the narratives that inform telecommunications policy. In fact, there has been a large refusal to admit that the Internet's design has anything to offer our understanding of how we should think about telecommunications. The Internet Society deplores this approach, but it persists over the decades.

The best explanation we can offer is that the two principal laws governing communications, the Telecommunications and the Broadcasting Acts, were drafted before the Internet became a mass phenomenon in the mid-1990s, and statutes alone establish policy. Engineering concepts have no legal status. The result is often that regulatory decisions do not have to account for what the Internet is or how it is designed. To a great extent, telecommunications policy continues to be argued in terms of obsolescent conceptions of what technology is, and what competition should be, in an Internet-era. So shibboleths like “facilities-based” competition continue to be taken seriously, as if the only relevant form of competition (“real competition”) continued to be among vertically integrated suppliers trying to bring bandwidth the consumer, to the exclusion of the competition which occurs among the thousands of applications that vie for consumer attention on the devices we hold in our hands.

The other concept which is denigrated is that, in the chain from underlying carrier to end customer, a retailer of network capacity might be able to offer a better, more attractive interface between the customer and the underlying network operator. It is akin to the idea that airplane passengers are not benefitted by travel agencies, or that car-rental agencies ought not to come between the automaker and the end user, because they do not make cars or airplanes. The prejudice against intermediaries who lease capacity from network operators in order to offer better or cheaper service is one of the persistent bad ideas in the impoverished arena of telecom policy.

⁶ https://en.wikipedia.org/wiki/Moore's_law

It is taken as axiomatic that a regulatory commission can only be informed by a statute. Even a phenomenon as large and important as the Internet has only very lately begun to inform the reflections of the policy makers because the design of the Internet is a fact, not a law. A regulator or a policy maker is not obliged to recognize a fact unless it has been raised and argued before the Commission or a court, or until its recognition is unavoidable.

For this reason the CRTC has only very recently started to accommodate the Internet's design into its decisions. For example, a recent case⁷ concerned whether an application, which carried video entertainment, and therefore 'broadcasting' as the Broadcasting Act defines it, caused the underlying transport layers also to be 'broadcasting', or whether the underlying layers were better assimilated to telecommunications, which are governed by common carriage and non-discriminatory obligations. If you think about the issue from the point of the Internet, saying that an application has the power legally to transform the transport layers that carry the app into 'broadcasting' is absurd; whereas, if you consider matters from a legal point of view, the argument can be made, even if it leads to crazy results. Law is often a matter of making a label stick to an object.

The Internet Society, Canadian Chapter, thinks that basic features of the Internet need to be assimilated in how we consider telecommunications policy. So far we have used words not found in the Telecommunications and Broadcasting Acts: applications and transport layers. A very short explanation is in order. The transformation which the design of the Internet accomplished was to isolate the carriage of a signal from the content. This was accomplished by interposing a layer of software called the TCP/IP protocol. The effect of this invention was to enable a transformation. Thereafter, any kind of carrier could carry any kind of signal or, as they came to be known, application. More than this, the maker of the application did not have to be the carrier. Indeed, the internet split the industry into two kinds of enterprise, whereas before they had been united. Prior to the advent of the Internet, each kind of carrier could provide only a limited range of services, such as telephony or television.

After the Internet was invented, innovation could come from new sources. For example, Tim Berners-Lee devised the world wide web, and made it available to anyone who could download the application from the CERN website⁸. So thousands of people downloaded the world wide web and then needed browsers to manage the resources that then became available. Note that the world wide web was not the Internet; the Internet was a set of protocols that enabled machine to machine communications regardless of the internal workings of the computers that were

⁷ <http://www.crtc.gc.ca/eng/archive/2015/2015-26.htm>, Benjamain Klass and Consumers' Association of Canada v. Bell Mobility

⁸ <http://webfoundation.org/about/vision/history-of-the-web/>

connected. Once the TCP/IP protocols were established as the standard for machine to machine communications⁹, revolutions like the world wide web became possible

The invention and adoption of the Internet as a standard accomplished mighty changes that we are still adapting to. One was to engender *permissionless innovation*. Tim Berners-Lee did not need the permission of the phone companies to make the world wide web software available, and every software billionaire since then has made his fortune on the same basis. None of them has had to seek permission from a carrier.

The second major effect of the Internet has been to displace carriers from the forefront of technical innovation, and destroy the service monopolies they used to have. Anyone can load an application onto the Net, without permission. The telephone has become an *app*. The broadcaster has become an *app*.

What makes the Internet interesting and useful all derive from *applications*, not from transport.

Users need transport, of course, and this is the subject of the CRTC's decision: how best to roll out transport to end users. But people are not fundamentally interested in transport as long as they have enough of it to handle the applications they might want.

Carriers do not produce applications, applications makers do. The Internet Society, Canadian Chapter considers that it is time for telecommunications policy to start to assimilate the implications of the Internet: carriage is vital, but it is no longer the only thing that matters. Without carriage there are no applications available, but with adequate carriage citizens are able to reap the benefits of a system in which carriers are not the creators, inventors, and exclusive controllers of the rate of innovation.

Relevance for the CRTC Decision 2015-326 and the Bell Petition

The argument made by Bell is that there is *no conceivable wholesale price* that would not deter Bell from investing in fiber facilities to a significant degree.

The same arguments and dire warnings have been made in the United States by Verizon and AT&T in relation to the imposition of net neutrality rules. Yet both companies later admitted that their plans for investment in fiber had not been affected by the FCC's declaring Internet traffic to be governed by common carrier status¹⁰ (which is the same status that non-broadcasting Internet

⁹ The TCP/IP suite was established as the military standard by DARPA in 1980 and the civilian standard for ARPANet in 1983. See the IETF's "Brief History of the Internet", written by the creators of it, at

<http://www.internetsociety.org/internet/what-internet/history-internet/brief-history-internet>

¹⁰ <http://arstechnica.com/business/2014/12/verizon-admits-utility-rules-wont-harm-fios-and-wireless-investments/> and <http://www.techtimes.com/articles/21055/20141127/at-t-to-fcc-did-we-threaten-to-halt-fiber-rollout-no-not-really.htm>

traffic has in Canada). Bell is making the same threats in its petition to the Governor in Council. It does this with some regularity when the CRTC makes decisions it does not like.

The fact remains that (former) cable and (former) telco are locked into duopolistic competition for the customer. Right now, the former telcos have significant advantages because the optical fiber they are laying has significant advantages in terms of its carrying capacity.

Nevertheless, the form of competition between (former) cable and (former) telco is now mediated by a newer form of competition among applications and content providers. What this signifies for policy is that facilities-based competition, while vital and good, is not the only or even the most important form of competition in an Internet-mediated world.

If we could use a metaphor of the carrier as an inter-city highway, then the addition of highways between Montreal and Toronto may be good, but the form of competition that people are really interested in is not in highways, generally speaking, but in the cars that people may use.

Given that these metaphorical “highways” are strands of optical fiber, their carrying capacity is huge. A single fiber to the home can carry all conceivable signals that could ever be generated from the home or downloaded to it. Wave division multiplexing, which consists of stuffing more signals by using various wavelengths of colour in the pipe, explodes carrying capacity by arbitrarily huge amounts.¹¹

But for the fact that cable television grew up in a technically isolated and protected regulatory silo under the Broadcasting Act, it would not now be a financeable proposition to install it *de novo*.

The subject matter of optical fiber is important because in technical terms, the carriage problem has been solved. The challenge is to ensure that carriers are sufficiently rewarded for deploying it. In this we agree that carriers must receive an adequate return.

The argument of Bell is that every cent of return on fiber investment must come back to it, and it alone. The idea that a wholesale customer might fill Bell’s pipes more efficiently than Bell can do it for itself was not even considered, and yet it should be. The CRTC is as concerned as anyone to see the extension of adequate modern bandwidth to Canadians. The Commission is also concerned with the market power that could ensue from inadequate competition in Canadian telecommunications markets.

One of the most effective ways of ensuring adequate retail competition and customer choice has been to allow wholesale access to facilities. Doing so involves the establishment of wholesale rates. In substance, only the carriers have the data that allow for the establishment of wholesale

¹¹ “While the physical limitations of electrical cable prevent speeds in excess of 10 Gigabits per second, the physical limitations of fiber optics have not yet been reached.” https://en.wikipedia.org/wiki/Fiber-optic_communication

rates. Their data can be challenged by the smaller ISPs, but in the main, the carriers' conceptions of their network costs prevail.

Consequently, in terms of the actual decision before the government, the Bell petition can be readily dismissed as premature.

The Internet Society, Canadian Chapter, has gone further in this paper than is strictly necessary. We consider that telecommunications policy is in many ways stuck in a pre-Internet time warp. Neither of the two major pieces of legislation covering this field, the Telecommunications Act (1993) nor the Broadcasting Act (1991), was drafted to account for the Internet, and in the case of the Broadcasting Act, the law was designed explicitly to fold every video signal into its reach, regardless of technology.

When parties argue before the CRTC, they are compelled to fashion their arguments into forms that each statute allows. As statutes are to a regulatory process, so are operating systems to a computer. Thus argument before the Commission asks "is it broadcasting?" or "is it telecommunications?" Maybe the relevant question is "why are we still talking as if the Internet had not been invented?" "What is it about the Internet that requires rethinking how we argue about telecommunications policy?"

Part of the answer to our rhetorical question would be this: why do we still assume that "facilities-based" competition is a meaningful term? Why, when applications have been divided from transport (the essence of the Internet), do we still persist in imagining that multiple pipes answer all relevant questions about competition? What about the terms of access to those pipes?

Telecommunications is a specialized area of expertise, where ideas are not particularly welcome when they question the narrative that a) carriers rule and that b) more competition between carriers is the answer.

Carriage is hugely important, just as are highways. No one denies this. Governments have insisted that competition between carriers is all-important. But if applications have been separated from transport, it is equally relevant to be vigilant about the terms upon which companies have access to carrier facilities, whether for wholesale access or for supplying applications.

The CRTC has been diligent in considering how resellers can add value for consumers. It has also worked out effective rules that balance the needs of carriers to defend their networks against technical attacks, and the terms on which they can offer access to applications and end-users.

Conclusion

We urge the government to begin thinking about how the Internet needs to be accommodated in our ideas of what competition and innovation ought to mean in both telecommunications and broadcasting. The Internet Society, Canadian Chapter thinks it is time to retire some ideas from serious consideration, including the idea that “facilities-based competition” is the sole relevant and all-encompassing answer to what competition means in an Internet era.

More simply, until the process has been worked out for establishing prices for wholesale access to Bells’ networks, this petition is premature.

Yours very truly,

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