

Structural and Functional Separation in Broadband Networks: An Insufficient Remedy to Competitive Woes in the Canadian Broadband Market

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With only a few large companies dominating the market in Canada, the lack of competition in telecommunications is an ongoing problem for which there are no easy solutions. The most difficult and potentially the most effective resolution could be to restructure the industry according to its wholesale/retail components. The purpose of this chapter is to explain how this concept works in other parts of the world and how it might work in the context of the Canadian residential broadband market.

Since the early days of broadband provision, OECD policy makers have embraced competition as a means for increasing broadband network availability, recommending competition between different infrastructures as a foundation for broadband policy.¹ In the United States and Canada, the policy environments have encouraged this approach, known as facilities-based competition, wherein competing infrastructure providers, primarily cable and telephone companies, offer broadband connectivity to individuals' homes on competing platforms.

By 2009, 85% of Canadian households could access broadband services using DSL (provided using a telephone connection) and 80% had access to broadband from a cable company. 95% of Canadian households have access to at least one broadband service (DSL, cable or fixed wireless), and mobile wireless broadband (offered by cell phone companies) is now available to 99% of the population. The facilities-based competition approach to encouraging the supply of broadband connectivity has been effective in offering consumers a choice of access technologies. Approximately 62% of Canadian households chose to subscribe to broadband services (at speeds of 1.5 megabits per second or greater) in 2009.² But as the CRTC notes, the market is highly concentrated, and although consumers do have a choice between cable and telephone broadband service providers, broadband prices are somewhat higher in Canada than elsewhere in the OECD, and services are slower.³ A report commissioned by Canada's largest Internet Service Providers (ISPs) suggests that Canadians do have good broadband service options, reinforcing the importance of consumer choice among technologies, and noting that prices for entry level services are very affordable.⁴

While it is the case that Canadians living in urban centres have easy access to what can be described as 'first generation' broadband services (those provided over existing cable and copper networks), some observers suggest that the dominance of incumbent⁵ telephony companies and large cable companies has resulted in a nominally competitive environment that does not actually encourage innovation in broadband services, or enable market entry of new competitors.⁶ Indeed, the broadband services in 94.3% of Canadian households are provided by incumbent telephone companies or cable companies, and five companies – Bell, Telus, Rogers, Vidéotron and Shaw –

collectively earned 76% of all retail internet access revenues in 2009.⁷ Other providers (generally smaller, independent companies) play a very small role in the Canadian broadband market, and on this point, the CRTC notes that “Observers have asserted that the concentration of broadband revenues accruing to ILECs [incumbent telephone companies] and cable providers has the effect of keeping consumer prices higher than they might otherwise be”.⁸

In markets like Canada where competition exists between infrastructure providers, there are mixed opinions about the need for additional service providers. Facilities owners suggest that there is robust competition between platforms, but there is less competition among providers on any single platform. So while Canadians have a choice between cable or DSL broadband providers, there is limited choice as to which DSL or cable service they can select. Further, if a household is interested in ‘bundling’ some combination of cell phone, TV, internet and phone services to receive discounted pricing (an option taken up by 34% of households in 2009), the only choice in most cities is to buy service from the single cable company or the single incumbent phone company that operates in that market. The CRTC notes that this situation “has the potential to entrench the dominant position held by incumbent facilities-based providers”.⁹ As such, the case for encouraging other service providers to enter the market is that they can offer competition *within* DSL and cable markets¹⁰, challenging the incumbents’ duopoly, and offering variety in pricing (perhaps offering higher speeds or higher download caps than available with comparably priced services), contract terms (e.g. not requiring a long-term commitment to the service provider), and products (e.g. selling ‘dry-loop’ DSL, which allows customers to get DSL service without paying a monthly telephone subscription fee).

Because building new facilities to provide broadband services to people’s homes requires very high levels of investment, regulations are in place that allow companies that do not own their own infrastructure to provide service by making use of existing infrastructure. Either through purely commercial arrangements, or by means of regulated wholesale access, market entrants (competitors) provide broadband service using the incumbents’ networks. The rationale for regulating wholesale access to existing infrastructure is that it is not economically efficient to duplicate parts of this infrastructure (e.g. the copper wire connecting an individual’s house to the telephone company’s exchange), but by sharing part of the network, it is possible to encourage new companies to enter the market as competitors.¹¹

Theory suggests that over time the market entrants will be able to build up a sufficient customer base to allow them to reduce their dependency on incumbents’ infrastructure, and to invest in their own facilities. But the 2006 Telecommunications Policy Review Panel concluded that “There is no evidence in Canada that the CRTC’s ‘stepping-stone’ strategy has provided an effective transition to greater reliance by entrants on their own facilities”.¹² This point highlights the challenges for market entrants competing with incumbent providers using the incumbents’ networks, and it is in this realm where the separation of infrastructure provision (wholesale access) and service provision (retail broadband sales) is relevant. Until market entrants can build up a sufficient business to invest in their own infrastructure, they have limited control and flexibility in the services they can offer because they are dependent on their dealings with the incumbents.

This dependency has been highlighted by the recent uproar over Bell and Bell Aliant's efforts to impose usage-based billing on their wholesale customers.¹³ The usage-based billing issue in Canada is but one example of how incumbents operating in both retail and wholesale markets make it difficult for wholesale customers to develop their own viable retail products.¹⁴ Wholesale access is regulated to mitigate this problem of incumbent market power, but the recent Canadian experience shows that regulatory decisions do not always deliver a more competitive wholesale regime. Regardless of the final determination regarding usage-based billing in the Canadian broadband market, the issue illustrates the difficulties in establishing competitive retail offerings by means of regulated access to incumbents' networks. It is for this reason that functional separation is often proposed as a viable remedy.

In a functionally separated incumbent, there is a separation between the wholesale and retail operations, but both can still be owned by the same company. For example, in the United Kingdom, BT Retail provides broadband services to residential and business customers, and Openreach (created in 2006) provides access to network infrastructure used by competitors to deliver their own broadband products.¹⁵ Functional separation can be imposed upon an incumbent by a regulator (as happened in the United Kingdom), or it may be undertaken voluntarily (often because of a perceived threat that separation may be imposed, as was the case in Sweden). The objective of functional separation is to remove any incentive for the wholesale provider to favour its own retail operations over those of competitors. In Australia, the incumbent Telstra was required to undertake 'operational separation' in 2006, designed to enforce transparency and ensure equivalence in retail and wholesale service provision.¹⁶

Structural separation takes the separation a step further, and requires that wholesale and retail operations be conducted as strictly separate businesses, with no allowance for common ownership. Examples of structural separation are more common in 'next generation' networks that provide fibre connectivity direct to homes and businesses. In Singapore for example, the Next Generation National Broadband network is being built by OpenNet.¹⁷ OpenNet is known as 'NetCo', that is the network operator, and Nucleus Connect¹⁸ is the 'OpCo' or operating company. Nucleus Connect sells services to retail service providers, but does not offer any retail products itself. A similar principle will apply with Australia's National Broadband Network. The network is being built by NBN Co Ltd.¹⁹, which will operate solely as a wholesaler of network access, offering no competition to retail service providers. The Alberta Supernet is operated on a similar basis, with the operating company Axia NetMedia offering no retail services.²⁰

There is no requirement that incumbent broadband providers in Canada functionally separate their wholesale and retail operations. Evidence presented to the CRTC in a variety of proceedings over many years suggests that incumbents do discriminate against the retail providers to whom they sell network access, indicating that a functional separation regime could benefit the competitive retail providers and their customers. Documented forms of discrimination include price discrimination (e.g. where the incumbent telco or cableco sets their wholesale price for a service higher than the price they charge their own customers for the same service²¹) and non-price discrimination (where retail providers cannot provide the same services to their customers as offered by the incumbent provider). See the article by Van Gorp in this collection for further details on this issue.

An example of non-price discrimination is the refusal of incumbents Bell, Bell Aliant and Telus to make their higher speed DSL services available on a wholesale basis, despite two CRTC orders requiring that they do so. The telcos submitted a petition to the Governor in Council opposing these rulings, and in late 2009 the Governor in Council (the Governor General acting on the advice of the federal cabinet) referred these rulings back to the CRTC for further consideration.²² In August 2010 the CRTC ruled, again, in favour of a speed-matching requirement for wholesale broadband access.²³ In response, Mirko Bibic, Bell's Executive Vice-President of Regulatory Affairs continued to question the CRTC's rulings, stating "I am astonished at how the CRTC can come back and give cabinet the very same decision that cabinet asked them to look at again. We are certainly going to be making our views well known."²⁴ This quote indicates that non-price discrimination is viewed as an acceptable practice by Bell, despite repeated rulings to the contrary from the CRTC, and illustrates the challenges for competitors who wish to offer the same retail services as their wholesale providers do.

Webb argues that "The very reason for considering functional separation arises out of the misgivings that the current methods to control discriminatory behavior may not be fully effective".²⁵ It certainly appears that the CRTC has had difficulty implementing or enforcing policies that eliminate discrimination against market entrants in the Canadian wholesale broadband arena, and as a result, the competitive impact of regulated wholesale network access in Canada has been minimal. As noted, competitors serve fewer than 6% of broadband subscribers in the country.²⁶ In contrast, in the United Kingdom, where functional separation has been in place for several years, market entrants are now investing in their own infrastructure, and have gained significant market share among DSL providers. Competitors offer the same speeds as the incumbent, and prices have dropped dramatically since separation was introduced.²⁷ By the third quarter of 2009, no ISP had more than 30% market share, and five providers had a market share of 10% or greater²⁸ indicating a fundamentally different market structure than in Canada. It seems that functional separation has been effective in the United Kingdom, resulting in improved broadband service for customers, while not dampening incentives for investment. In Australia, since operational separation (and the resolution of a pricing dispute regarding access to the incumbent's infrastructure) a vibrant competitive market for DSL and DSL2+ services²⁹ has emerged.³⁰

Would functional separation regulation be effective in Canada? Unlike other countries in which separation regulations have been introduced, Canada does not have a single telecom incumbent. While regulation could certainly be applied to all Canada's incumbents, this could prove more challenging than achieving functional separation within a single incumbent. Although much of the discussion here regarding separation has revolved around telecom broadband providers,³¹ the introduction of functional separation in Canada would also need to apply to cable companies,³² potentially adding to the complexity of the exercise. Establishing functional separation in the Canadian broadband market would be complicated, but based on the results of functional separation in other regimes, it would be likely to foster more competition in the broadband market, particularly among DSL providers.

Unfortunately however, the longer term outlook for competitive service providers is not good. Setting aside the regulatory challenges of wholesale access, the technological limitations of DSL provision mean that the speeds that can be provided to customers using existing and upgraded

DSL networks cannot easily match those that can be provided by upgraded cable networks, new wireless networks, or fibre to the home networks.³³ While market entrants have been lobbying the CRTC for improved access to DSL services, far fewer have made use of cable infrastructures (through TPIA – Third Party Internet Access – tariffs). There are a number of reasons for this,³⁴ but as a result, few market entrants are able to provide their services using cable infrastructure. The recent CRTC decision³⁵ on wholesale access to broadband networks does require incumbent telcos and cablecos to allow competitors access to their next generation network infrastructure, but the bigger question is whether competitors can establish sufficient market share to stay in business into the future.

Even with access to faster networks, the competitive market providers are limited in their offerings. They are able to differentiate their services based on customer service and contractual terms, but have few other options. Unlike cablecos and incumbent telcos, they cannot provide TV services³⁶ and they do not have mobile phone offerings, meaning they cannot offer a bundle of telecommunication services. Independent ISPs must innovate to survive, but this is increasingly difficult. CRTC Commissioner Timothy Denton, dissenting in part with the recent decision on wholesale access notes that the decision “keeps independent ISPs somewhat competitive.” He says that the Commission’s decision “neither eliminates them [independent ISPs] nor allows them the scope to compete effectively. It maintains them in a kind of regulatory limbo.”³⁷ Denton was referring specifically to a request that incumbent telcos be required to offer a more flexible wholesale DSL product, one that Denton believes would foster innovation among market entrants and allow them more scope to establish viable, competitive businesses that offer Canadians real alternatives to the incumbents. He argues that the Commission remains ambivalent about the role of independent ISPs, companies that “are allowed to exist but denied the means to innovate.”

Around the world, functional separation in the wholesale broadband access market has allowed competitors greater flexibility and scope for innovation. In Canada, the usage-based billing issue has raised consumer awareness of independent ISPs and will likely result in increased market share for them. But with persistent and fierce competition from the dominant cable and telco incumbents, the prospects for independent ISPs in Canada, with or without functional separation, are not strong. In other markets, functional separation was introduced earlier, allowing market entrants to build their businesses to a point where they are able to compete with incumbents. Functional separation would make it easier for Canada’s independent ISPs to get access to critical network infrastructure, but the issue is not on the CRTC’s agenda. Even if the Federal Government were to follow the lead of other countries and require functional separation, by the time it was implemented, it is not clear how many independent ISPs will remain to benefit from this change to the wholesale regime. Because the Canadian wholesale access regime for existing broadband infrastructure is not working well any efforts to improve wholesale access, especially to next generation networks, will benefit Canadians by encouraging competition in the market. Unfortunately however, neither functional nor structural separation alone will remedy the competitive issues in the Canadian broadband market.

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URLs accessed March 1, 2011 unless otherwise indicated.

¹ OECD Directorate for Science Technology and Industry (2001). *The Development of Broadband Access in OECD Countries*. Paris: OECD; OECD (2004). Recommendation of the OECD Council on Broadband Development. http://www.oecd.org/document/36/0,3343,en_2649_34223_34238436_1_1_1_1,00.html; OECD. (2008). *Broadband Growth and Policies in OECD Countries*. Paris: OECD.

² Canadian Radio-television and Telecommunications Commission (2010a). *Communications Monitoring Report*. Ottawa: Canadian Radio-television and Telecommunications Commission. <http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2010/cmr2010.pdf>.

³ Canadian Radio-television and Telecommunications Commission (2010b). *Navigating Convergence: Charting Canadian Communications Change and Regulatory Implications*. Ottawa: Canadian Radio-television and Telecommunications Commission. <http://www.crtc.gc.ca/eng/publications/reports/rp1002.pdf>.

⁴ Mark H. Goldberg & Associates Inc., & Giganomics Consulting Inc. (2009). *Lagging or Leading? The State of Canada's Broadband Infrastructure*. Toronto. <http://www.gstconferences.com/LagOrLead.pdf>.

⁵ The largest of these are Telus, SaskTel, MTS, Bell, Télébec and Bell Aliant. Each offers phone and Internet services in a specific geographic area, and some also offer competitive wireless service and business Internet access in various markets across the country.

⁶ Benkler, Y., Faris, R., Gasser, U., Miyakawa, L., & Schultze, S. (2010). *Next Generation Connectivity: A Review of Broadband Internet Transitions and Policy from around the World*. Cambridge, MA: Berkman Center for Internet & Society, Harvard University. http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Berkman_Center_Broadband_Final_Report_15Feb2010.pdf; Middleton, C. A., & van Gorp, A. F. (2009). *How Competitive Is the Canadian Residential Broadband Market? A Study of Canadian Internet Service Providers and Their Regulatory Environment*. Paper presented at the Telecommunications Policy Research Conference, Arlington, VA.

⁷ Canadian Radio-television and Telecommunications Commission. (2010a).

⁸ Canadian Radio-television and Telecommunications Commission. (2010b). p. 25.

⁹ Canadian Radio-television and Telecommunications Commission. (2010b). p. 23.

¹⁰ Although cable companies in Canada are required to make their infrastructure available for use by competitive service providers, this is much less common than competitive service provision over DSL infrastructure.

¹¹ This is known as 'service-based competition'.

¹² Telecommunications Policy Review Panel. (2006). *Telecommunications Policy Review Panel - Final Report 2006*. Ottawa: Industry Canada, p. 3-35. http://www.telecomreview.ca/eic/site/tprp-gecrt.nsf/eng/h_rx00054.html

¹³ CRTC Telecom Decision 2010-255 allowed Bell and Bell Aliant to charge its wholesale customers (competitive ISPs) usage fees for each end-user (residential broadband customer) whose monthly usage exceeded a set cap. CRTC Telecom Decision 2011-44 confirmed the rates that would be payable by the competitive ISPs and as a result competitive ISPs announced they would be imposing usage caps on their customers. The Stop the Meter campaign (<http://stopthemetra.ca>) very effectively raised public awareness of this issue, gathering almost half a million signatures on a petition opposing usage-based billing. Industry Minister Clement quickly indicated that the

government would not allow the decision to stand. As this chapter goes to press in March 2011, the House of Commons Standing Committee on Industry, Science and Technology is studying the issue, and the CRTC has launched a review of billing practices for wholesale residential high-speed access services (Telecom Notice of Consultation CRTC 2011-77).

¹⁴ For international examples, see Bourreau, M., & Doğan, P. (2004). Service-Based vs. Facility-Based Competition in Local Access Networks. *Information Economics and Policy*, 16(2), 287-306; Cave, M. (2006). Six Degrees of Separation: Operational Separation as a Remedy in European Telecommunications Regulation. *Communications & Strategies*, 64(4), 89-103; infoDev, & International Telecommunication Union (2010). ICT Regulation Toolkit: Structural Separation Explained and Applied <http://www.ictregulationtoolkit.org/en/PracticeNote.3149.html>; Van Gorp, A. F., Maitland, C. F., & Hanekop, H. (2006). The Broadband Internet Access Market: The Changing Role of ISPs. *Telecommunications Policy*, 30(2), 96-111; Whalley, J., & Curwen, P. (2008). Equality of Access and Local Loop Unbundling in the UK Broadband Telecommunications Market. *Telematics and Informatics*, 25(4), 280-291.

¹⁵ See <http://www.btplc.com/Thegroup/Ourcompany/Companyprofile/Groupbusinesses/index.htm> for details. Both companies are part of the BT Group.

¹⁶ Telstra (2006). *Operational Separation Plan*. Melbourne: Telstra. http://telstrawholesale.com/dobusiness/customer-commitment/docs/op_sep_plan.pdf.

¹⁷ OpenNet is a consortium led by Canada's Axia NetMedia Corporation in partnership with Singapore Telecommunications Ltd, Singapore Press Holdings Ltd and SP Telecommunications Pte Ltd. <http://www.ida.gov.sg/News%20and%20Events/20080926174755.aspx?getPagetype=20>

¹⁸ <http://www.nucleusconnect.com/company.php?navid=2&itemID=2>

¹⁹ <http://www.nbnco.com.au/about-nbn-co>

²⁰ See http://www.thealbertasupernet.com/what_is_the_supernet/axias_role.html. The Supernet does not offer connectivity directly to individuals, but Internet service providers can use the Supernet to provide broadband to consumers throughout Alberta.

²¹ See for example the Part VII application from Electronic Box Inc. to review Telecom Decision 2006-77 regarding third-party Internet access service rates, which resulted in cableco Vidéotron lowering the disputed wholesale rate; Electronic Box (2009). Part VII Application from Electronic Box Inc. To Review Telecom Decision 2006-77 Re Third-Party Internet Access Service Rates. http://www.crtc.gc.ca/PartVII/eng/2009/8661/e42_200914045.htm.

²² This issue was part of the expanded *Proceeding to consider the appropriateness of mandating certain wholesale high-speed access services*, TNC 2009-261. <http://www.crtc.gc.ca/eng/archive/2009/2009-261.htm>

²³ Canadian Radio-television and Telecommunications Commission (2010c). *Telecom Decision CRTC 2010-632: Wholesale High-Speed Access Services Proceeding*. <http://www.crtc.gc.ca/eng/archive/2010/2010-632.htm>

²⁴ Piliéci, V. (2010). Bell to Appeal CRTC Internet Ruling – Company Must Open Connections to Competitors, Commission Says. *Ottawa Citizen* (2 September). p. D1.

²⁵ Webb, M. (2008). *Breaking up Is Hard to Do: The Emergence of Functional Separation as a Regulatory Remedy*. Paper presented at the 8th Global Symposium for Regulators. p. 8.

²⁶ For a detailed discussion of the nature of competition among Canadian Internet service providers, see Middleton & van Gorp (2009).

²⁷ See Ofcom (2010). *Broadband Competition Reaches New Milestone*. <http://consumers.ofcom.org.uk/2010/09/broadband-competition-reaches-new-milestone/>. (accessed 20 September

2010). The Compare Broadband website lists broadband providers and allows comparisons of their offerings <http://www.comparebroadband.co.uk/home-broadband/>. Searching on a London postcode reveals an extensive list of providers, with a variety of higher speed and lower priced offerings not found in large Canadian cities.

²⁸ Broadband Stakeholder Group (2010). Broadband Statistics. <http://www.broadbanduk.org/content/view/272/55/>.

²⁹ DSL2+ services are widely available in Australia and the UK (among other locations). They offer download speeds of up to 24 megabits/second. Competitors offering these speeds are doing so using their own equipment installed in the incumbents' premises. In Canada, very few competitors have their own equipment, thus DSL2+ services are generally only available from the incumbents, who have not made these speeds available on a wholesale basis.

³⁰ Australian Communications and Media Authority (2009). *ACMA Communications Report 2008-09*. Melbourne: Australian Government; Venture Consulting (2009). *Venture Consulting / IIA Broadband Index – Ninth Edition (Q3 2009)*. Sydney: Internet Industry Association. <http://www.ii.net.au/images/stories/ia-venture-broadband-index-q3-2009.pdf>

³¹ Policies promoting competition based on wholesale access to telecom infrastructures are more common in countries where there is a smaller cable footprint, hence the focus has been on incumbent telcos, not cablecos.

³² The CRTC must ensure that its policies are technologically neutral and symmetric (Canadian Radio-television and Telecommunications Commission, 2010b).

³³ OECD Directorate for Science Technology and Industry (2008). *Developments in Fibre Technologies and Investment*. Paris: OECD Working Party on Communication Infrastructures and Services Policy. <http://www.oecd.org/dataoecd/49/8/40390735.pdf>.

³⁴ See Middleton & van Gorp (2009), on this point. The recent CRTC decision on speed-matching (CRTC, 2010c) requires cable operators to make it easier for market entrants to get wholesale access to cable networks.

³⁵ CRTC (2010c).

³⁶ Despite the name, Internet Protocol TV (IPTV) does not operate over the commercial internet, and incumbents are not required to allow competitors to offer this service over their networks.

³⁷ CRTC (2010c): Opinion of Commissioner Timothy Denton, Dissenting in Part.