

Assessing the Economic Impacts of Copyright Reform on Internet Service Providers

Prepared for Industry Canada

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Executive Summary

This report examines the economic impact of four alternative approaches to dealing with the Copyright Act as it relates to the issue of copyright liability for Internet service providers (ISPs).

The report begins by identifying the alternatives under consideration and the relevant stakeholders, and then proceeds to profile the Canadian ISP industry. The ISP industry is found to be serving consumer and business subscribers well, in terms of providing broad access to both dial-up and broadband Internet access services at prices that are among the lowest in the world.

The challenges facing content producing industries as a result of the Internet are very briefly considered, with the primary threat being the free digital distribution of copyright content over the Internet through peer-to-peer (P2P) networks. The number of digitally encoded music files (MP3) distributed is estimated in the billions per year; though it is not clear to what extent these downloads cannibalize sales, it is likely that the net effect of digital music downloads on CD sales is negative.

The economic impact of each of the proposed copyright amendment alternatives is examined in turn. The first alternative, the status quo, involves significant legal uncertainty and economic cost as a result of laws that are outdated and ambiguous with respect to the Internet. The absence of relevant case law requires ISPs to bear both the risk of being found liable for copyright infringement (and associated copyright liability insurance costs) as well as the legal costs of seeking resolution of that uncertainty. These costs and risks extend to organizations that are not businesses yet supply ISP-like services, for example libraries and universities. Because these costs benefit neither industry participants nor consumers, the status quo is considered unsatisfactory.

The other three proposals all have the benefit of clarifying the legal issues and providing ISPs with explicit conditions under which they may exempt themselves from copyright liability. Two of the proposals, the "Notice and Takedown" and the "Notice and Notice" approaches would provide guidelines for ISPs to work with content providers after receiving "notice" of copyright infringement. These approaches differ in where they place the burden of proof, and whether they require ISPs to remove allegedly infringing material after receiving a "notice" from a copyright holder or upon receiving a court order obtained by the copyright holder. Despite their operational differences, both approaches are economically beneficial for ISPs and other stakeholders in that economic uncertainty is removed. However, both ISPs and their customers would prefer the notice and notice approach, in that it provides alleged copyright infringers the benefit of due process and judicial oversight before material is removed; likewise, the notice and notice approach removes from ISPs the burden (and associated administrative and legal costs) of acting in a "quasi-judicial" role to determine whether a notice from a copyright holder conforms to the required standards.

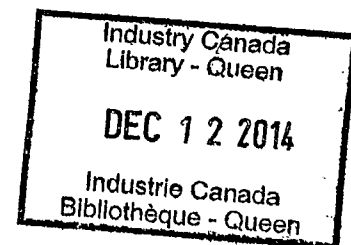
The impact of the fourth proposal, levying a "compulsory licensing" tariff on ISPs, depends on the magnitude of the tariff and its implementation. Technological feasibility constrains some approaches to implementing a tariff; for example, it would be nearly impossible to impose a tariff on only infringing materials. Although there is some uncertainty given as to how ISPs would react, if a compulsory licensing tariff were set at an economically meaningful level, it would likely result in higher prices for both dial-up and broadband Internet access. Given the own and cross-price elasticities of demand, these price increases will likely result in a shift of some subscribers from broadband to dial-up access, a process which may jeopardize the margins and financial viability of ISPs, especially smaller ones. Consumers may object to such levies, as they may find themselves paying copyright fees for both non-infringing uses as well as paying multiple copyright fees for the same content, for example with legally obtained digital content. Additionally, licensing tariffs would reduce the incentive for ISPs to expand access or service, and may result in a "chill" in terms of investment in firms that develop or depend on Internet technologies in Canada.

Thus, it is recommended that the Copyright Act be amended to provide explicit limitations of ISP copyright liability for transmission, reproduction, linking, and caching of copyrighted content using either the Notice and Notice or Notice and Takedown approach.

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1.0 Introduction

The widespread adoption of the Internet is having a significant transformative effect on firms, industries, and economies. Nowhere is that transformation felt more deeply than in industries whose products fall in the domain of copyright protection. Copyrights, along with other forms of intellectual property rights (IPR), are being challenged by the introduction of new technologies whose ramifications could not have been seen when the relevant legislation was drafted. The process of extending or adapting intellectual property rights is vital to how the "knowledge based economy" will evolve, as IPR in many ways defines the infrastructure of the knowledge-based economy, much as physical assets (e.g., roads, factories) defined the infrastructure of the industrial economy.¹

Internet service providers (ISPs) represent a new industry that is at the nexus of many of the concerns surrounding copyright. The near ubiquitous ability of digital communications technology to capture, reproduce, and, via the Internet, rapidly disseminate "digital content" will undoubtedly drive a major reorganization of content producing industries. In discussing copyright law, Samuelson and Varian (2001) note "...intellectual property policy is hampered by the lack of serious analysis of the economic impact of changes in both the law and operating practices. It would be worth considering ways to create an organizational framework under which economic considerations could be brought to bear on IP issues, given their increasing importance for the economy at large."

2.0 Objectives

The objective of this report is to provide an economic analysis of proposed changes to copyright legislation in Canada. While this report focuses on the impact of these proposed reforms on the ISP industry in Canada, the impact on other major stakeholders (e.g., consumers, content producers) will be discussed where relevant.

2.1 Alternatives

Three alternatives have been proposed to clarify what, if any, liability ISPs could face for copyright infringement. (The current status of ISP copyright liability, in Canada and abroad, will be discussed in Section 4.3 below.) In addition, this report will consider the implications of not amending copyright legislation. All three proposals aim to provide explicit limitations or "safe harbours" on ISP copyright liability. The last proposal differs by imposing copyright liability directly on ISPs, and requires a blanket payment regime to compensate copyright holders. The four alternatives are:

1. **Status Quo:** The copyright act would not be amended to specifically address ISP copyright liability. Instead, case law would continue to be used to clarify the issue.

¹ Cockburn and Chwelos (2001)

- 2. Notice & Takedown:** A provision in the Copyright Act that could require ISPs to take down (remove) infringing content upon notice, in proper form, from rights holders. In the context of this approach, an ISP would not be liable for having infringing material on one or more of its sites unless it failed to block access within a specified period of time upon receiving "proper notice" from a rights holder, or other interested party, that such material was potentially infringing.

There would be limitations on the liability of ISPs for any economic harm resulting from compliance with the notice and take-down regime. That is, an ISP that acts in good faith to block access to a site specified in a "proper notice" is not liable for the harm suffered in consequence by its client or other third party. Further, the claimant must corroborate its claim in a timely fashion.

The Copyright Act may have to be amended to limit liability of ISPs for the making of: (i) transient or incidental reproductions for transmission over networks (such exception would apply to all users and not just to ISPs); and (ii) reproductions that are made for the storage of information on networks (caching, hosting). With respect to the communication of materials over the Internet, the "common carrier" exception in the Copyright Act should continue to apply to ISPs.

- 3. Notice & Notice:** ISPs could be required, upon receipt of a statutorily-defined notice from a copyright holder alleging copyright infringement by a site hosted by the ISP, to in turn provide a statutorily-defined notice of the allegation to the party responsible for the alleged infringing site within a specified period of time. ISPs would not take down content until served with a proper court order which, among other things, confirms in fact and in law that inclusion of the content on the web site amounts to a copyright infringement. This approach may include amendments to the Copyright Act that would establish an expedited process for a copyright holder to seek and obtain a judicial take down order.

An ISP which complies with the administrative regime, by either furthering the notice to its client or advising the issuer of the notice that the facilities targeted in the notice are not under its care and control, would not be liable for damages in connection with any copyright infringement. ISPs would not mediate the dispute between parties about ownership of content, except to the extent of cooperating with an investigation by the proper authorities.

As in the Notice and Takedown proposal above, the Copyright Act may have to be amended to limit liability of ISPs for the making of: (i) transient or incidental reproductions for transmission over networks (such exception would apply to all users and not just to ISPs); and (ii) reproductions that are made for the storage of information on networks (caching, hosting).

Likewise, the "common carrier" exception in the Copyright Act should continue to apply to ISPs regarding communication of copyright material over the Internet.

4. **Compulsory Licensing:** ISP's would be required to pay royalties according to a tariff, likely set by the Copyright Board, for copyright material whether infringing or non-infringing that is circulating over their facilities or is being hosted on their servers, under either the communication right or the reproduction right. There would be no further Copyright liabilities on ISPs.

2.2 Stakeholders

In assessing the economic impact of these proposed changes to the Copyright Act, three classes of stakeholders are directly relevant.

1. **Internet Service Providers:** These proposals directly affect the operating environment for Canadian ISPs. Some of the alternatives have the potential for significantly raising the operating costs of ISPs, albeit with an explicit limitation on liability. The majority of the analysis in Section 4 will address the impacts of these alternatives on Canadian ISPs.
2. **Content Producers:** Firms that produce copyright material, whether text, images, sound, film, software, or other digital content, obviously have a vested interest in the reform of copyright law. Section 4.2 will outline the issues facing content producers, and Section 4.5 will briefly discuss the impacts of the proposed alternatives on them.
3. **Internet Subscribers:** The customers of the Canadian ISP industry are firms and consumers that contract with ISPs for access to the Internet, as well as a host of ancillary services, foremost the hosting of content (websites) on the Internet. The proposed alternatives may have significant cost or competitive implications for the ISP industry, which will be, to a greater or lesser extent, passed on to their customers. Implications for individuals and firms dependent on Internet subscribers (e.g., suppliers to a firm that sells its products via a website hosted by a Canadian ISP) will not be explicitly considered, but may also be significant. Again, the implication for consumers and business customers of ISPs will be outlined in Section 4.5 below.

3.0 Data and Methods

Given the timeframe and the scope of this project, data collection was primarily limited to publicly available sources, such as Statistics Canada, Industry Canada, and the Canadian Radio-television and Telecommunications Commission (CRTC). These sources provided data on the current status of the Canadian ISP industry. In addition, market research firms (e.g., Gartner, Jupiter, Market Share Reporter, ISP Planet) were used to obtain additional information on the Canadian and international ISP markets. As a representative of the ISP industry, the

Canadian Association of Internet Providers (CAIP) was contacted for its position on the proposed reforms.

During January of 2003, the author interviewed five Canadian ISPs, two of which were "large," having revenues greater than \$100 million per year, and three of which were "small," having revenues less than \$10 million per year. These interviews were confidential, but an aggregate picture of respondent organizations is presented in Appendix 1. The interview methodology was semi-structured, and the questionnaire is presented in Appendix 2. The semi-structured format ensured that important questions were addressed by all respondents, but also allowed flexibility to explore unique issues of interest to individual respondents. In the small organizations, the individuals responding represented business managers and/or owners. In the two large organizations, multiple respondents were used to address both the business perspective and the legal perspective. In each of the large organizations, one of the respondents was the chief legal counsel in charge of copyright issues, while the other respondent was a senior manager in charge of marketing and operations of the ISP services. The opinions expressed in these interviews will be cited as ISP (#).

Two major bodies of literature were surveyed for relevance to this report: (i) the microeconomic literature, especially as it relates to intellectual property rights, copyright, and the Internet; and (ii) the economics and law literature, as it relates specifically to Internet copyright issues and the potential for holding ISPs liable for copyright infringement. Both the author and a research assistant reviewed these literatures independently.

The analysis below relies primarily on microeconomic theory, especially as it relates to production, consumption, welfare, and competition (industrial organization economics). Methods used to assess the degree of concentration in the Canadian and US ISP industries and the available data are described in Appendix 3. Issues of legal theory and equity are discussed briefly where appropriate.

4.0 Analysis

The objective of this report is to provide an economic analysis of the proposed amendments to the Copyright Act. This analysis begins in Section 4.1 with a profile of the current status of the Canadian ISP Industry and its customers. Section 4.2 outlines the challenges and opportunities created by the Internet for content producers. Section 4.3 describes the current status of ISP liability, focussing on Canada and the US. The economic impact of each of the alternatives for the ISP industry is analyzed in Section 4.4. The analysis concludes in Section 4.5 with a brief discussion of the economic impacts of the proposed alternatives for content producers, consumers, and business users of the Internet.

4.1 The Canadian ISP Industry

The Canadian ISP industry is summarized in a recent CRTC report:

“Internet access involves connecting to a provider that will move one's packets to and from other Internet destinations; the provider acts as an interface with the rest of the Internet. Although Canada first connected to the Internet in 1981, a rudimentary market in Internet access did not develop until 1991, following the Internet's gradual conversion to a general-purpose networking platform. By the end of 2001, retail Internet access had become a \$2 billion market in Canada, registering an average annual growth rate of 72% during the 1998 to 2001 period.”²

Estimates of the total revenues for the Canadian ISP industry in 2001 range from \$1.27 billion³ to \$1.9 billion⁴, with an additional intermediate estimate of \$1.7 billion.⁵ Consumer expenditures on Internet access have exceeded 0.1% of total expenditures since 1998, and thus represent a significant portion of the economy (Yu 2003).

4.1.1 Products and Services

Internet access comes in two major varieties: dial-up and broadband (or “high speed”). Dial-up provides access to the Internet via a telephone line and a modem, typically at speeds of 56kbps (kilobits per second) or less. While using dial-up Internet access, the phone line is completely dedicated and cannot be used for voice. Thus, some residential dial-up users have a second phone line installed for dedicated Internet access.

Broadband access is either provided via the telephone line, using DSL (digital subscriber loop) technology or via cable television's coaxial cable.⁶ DSL requires the use of a special DSL modem which must either be purchased or rented from the ISP. Unlike dial-up, DSL can be “always on” and, since it used bandwidth in the inaudible frequencies, does not interfere with use of the phone line for voice communications. Access speeds are frequently asynchronous for residential customers, meaning that more of the available bandwidth is dedicated for downloading information from the Internet than sending information out to the Internet. Typical access speeds are 2400 kbps down and 640 kbps up. More recently, ISPs have introduced two or three tiers of DSL service, providing different access speeds at different price points. DSL availability is limited by the lack of electromagnetic shielding on POTS (plain old telephone system) wires, which puts an upper limit on the distance a subscriber can be away from the local telephone switching station. That limit is typically about 3.5 kilometres.

² CRTC (2002), p. 44.

³ Statistics Canada (2003)

⁴ CRTC (2002)

⁵ Pollara (2002)

⁶ This report ignores other broadband technologies, such as fibre and fixed wireless, which are estimated to account for less than 10,000 users in Canada (CRTC 2002).

Cable broadband also requires a special (cable) modem for Internet access, which again must either be purchased or rented from the ISP. Access speeds for cable are similar to those of DSL. Use of a cable modem does not interfere with use of the cable network for television viewing.

In 2001, dial-up connections were the most commonly available Internet access in Canada (offered by 77% of the ISPs). Nevertheless, 82% of ISPs offered some type of high-speed connection as well. The proportion of ISPs offering each type of high-speed access is: DSL (45%), ISDN (44%), fractional T3 (39%), T1 (34%), Cable (14%), and T3 (9%).⁷

ISPs primarily provide access to the Internet, but may also provide other services such as hosting or designing Websites, designing e-commerce applications, or providing security for e-commerce transactions. Table 1 describes the services most commonly provided by Canadian ISPs.

| Service offered (in addition to Internet access) | % of ISPs currently offering the service | % of <i>additional</i> ISPs planning to offer the service |
|--|--|---|
| Website Hosting | 76% | 1% |
| Web design / consulting | 64% | 1% |
| E-commerce applications and hosting | 54% | 5% |
| Software / Hardware sales | 49% | 1% |
| Virtual Private Networks | 45% | 1% |
| Hosted software applications (ASP) | 38% | 1% |
| E-commerce credit verification | 29% | 2% |
| Voice Over IP | 15% | 8% |
| Security services such as PKI | 12% | 2% |

Table 1: Services Offered by Canadian ISPs (Source: Pollara, 2002)

4.1.2 Customers

The customers of the Canadian ISP industry are business and residential customers subscribers, with retail customers accounting for 75% of the revenues for the ISP industry in 2001.⁸ Concern over access to the Internet is a common theme of telecommunications policy, as access to the Internet is correlated to both education and income. The "gap" in terms of Internet usage between different groups based on income, education, age, geographic location (urban versus rural), and even ethnicity has been labelled the "digital divide" in US policy discussions.⁹ Figure 1 and Figure 2 depict the relationships between Internet access versus education and income, respectively, in the US for 2000.

⁷ Pollara (2002)

⁸ CRTC (2002)

⁹ Hoffman and Novak (2000)

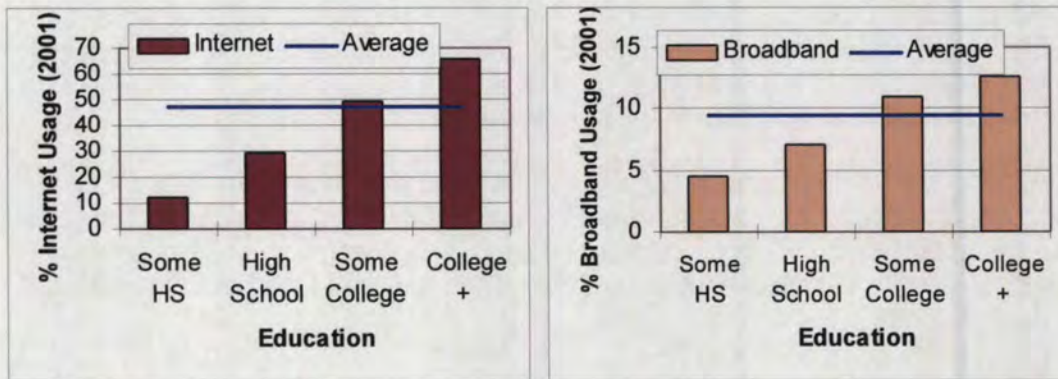


Figure 1: US Internet Access by Education (Source: Rappaport et al. 2002)

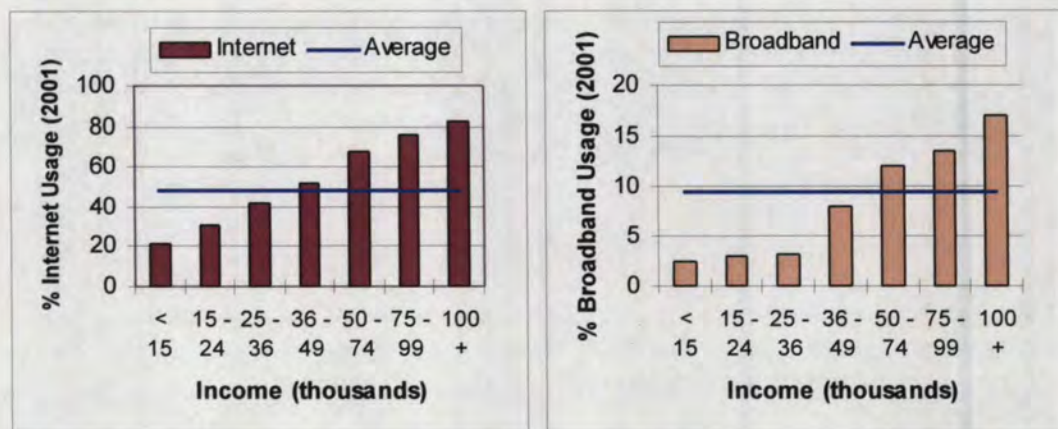


Figure 2: US Internet Access by Income (Source: Rappaport et al. 2002)

Fortunately, the comparable figures for Canada do not indicate quite so large a gap in terms of access to the Internet, at least in terms of income. Data from Statistics Canada for 2001 assess the usage of the Internet (at any location) by Canadians broken down by income quartile and education level. These numbers are depicted in Figure 3 and Figure 4, respectively. Figure 5 indicates that the degree of household Internet access of the lowest income quartile is among the highest in the OCED, behind only New Zealand and Denmark. Likewise, the "digital divide," as measured by the interquartile range, is smaller than in many OECD countries.

By 2000, Internet usage was nearly equal across genders in Canada, with 56% of men using the Internet and 50% of women. While there is still a difference, it is much smaller than in 1994, when the ratio of men to women was nearly 2:1 (22% versus 14%).¹⁰

¹⁰ Source: Statistics Canada, The Daily, March 26, 2001.

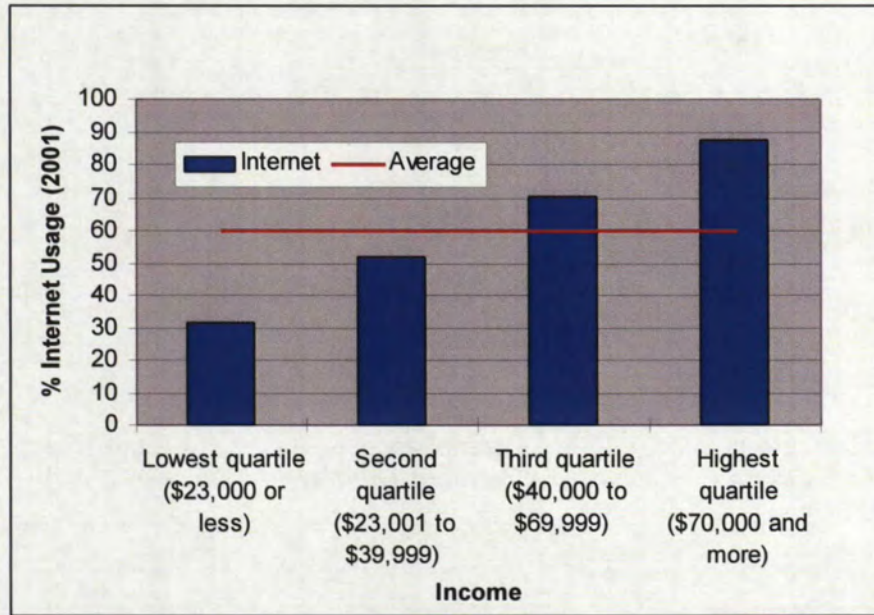


Figure 3: Internet Use by Income in Canada for 2001 (Source: Statistics Canada 2002)

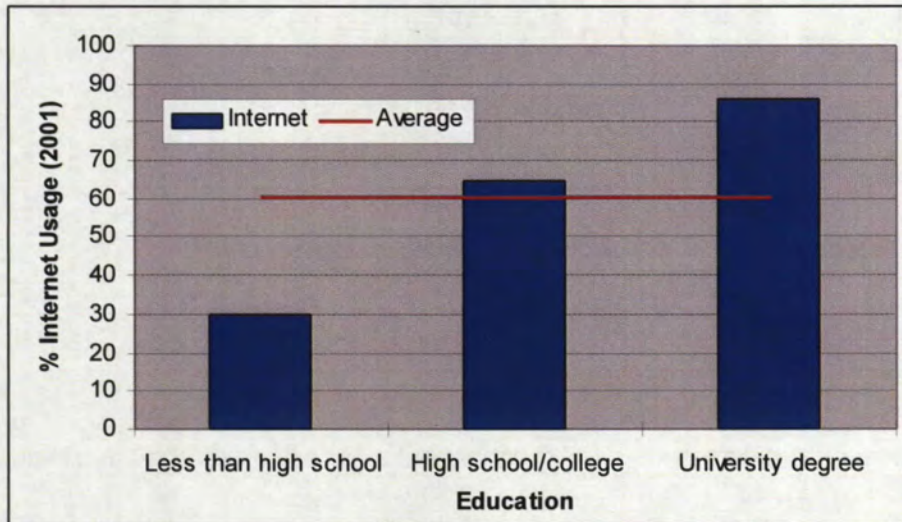


Figure 4: Internet Use by Education in Canada for 2001 (Source: Statistics Canada 2002)

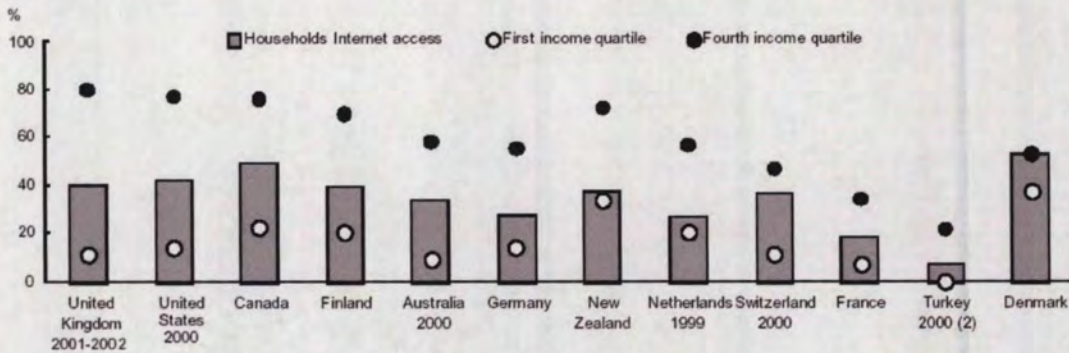


Figure 5: Residential Internet Access by Income (Source: OECD 2002)

Another concern is access to the Internet across different age groups, particularly by seniors. Figure 6 indicates the distribution of Internet access by age group in Canada for 2001.

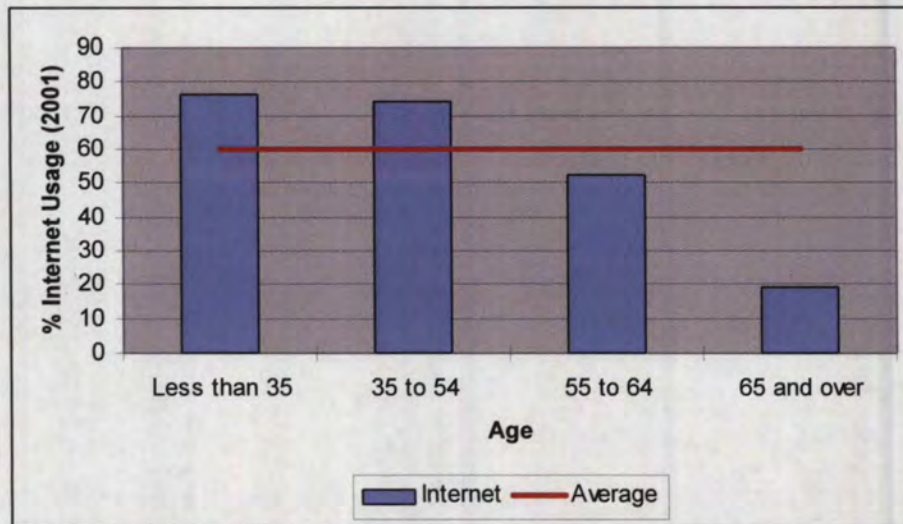


Figure 6: Residential Internet Access by Age Group (Source: Statistics Canada 2002)

One final aspect of disparity of Internet access is availability by geography, especially in rural areas. It was explicitly established as an objective that all Canadians be able to connect to the Internet via dial-up without incurring long distance charges; as of the formation of that objective in 1999, more than 97% of local exchange carriers met that objective.¹¹ As of 2002, 85% of Canadians lived in communities served by one or more broadband technologies; this figure is up from 75% in 2001.¹²

¹¹ CRTC (2002)

¹² CRTC (2002)

Compared to other countries, Canada is a leader in terms of both pricing and usage of the Internet. Despite having nearly identical broadband availability in the US (also 85% of individuals in 2002), broadband usage is 3.75 times higher in Canada than the US.¹³ As of 2001, 45% of household Internet subscribers used either Cable or DSL broadband connections (see Figure 7). In fact, Canada is second only to Korea in terms of per capita usage of broadband, as depicted in Figure 8.

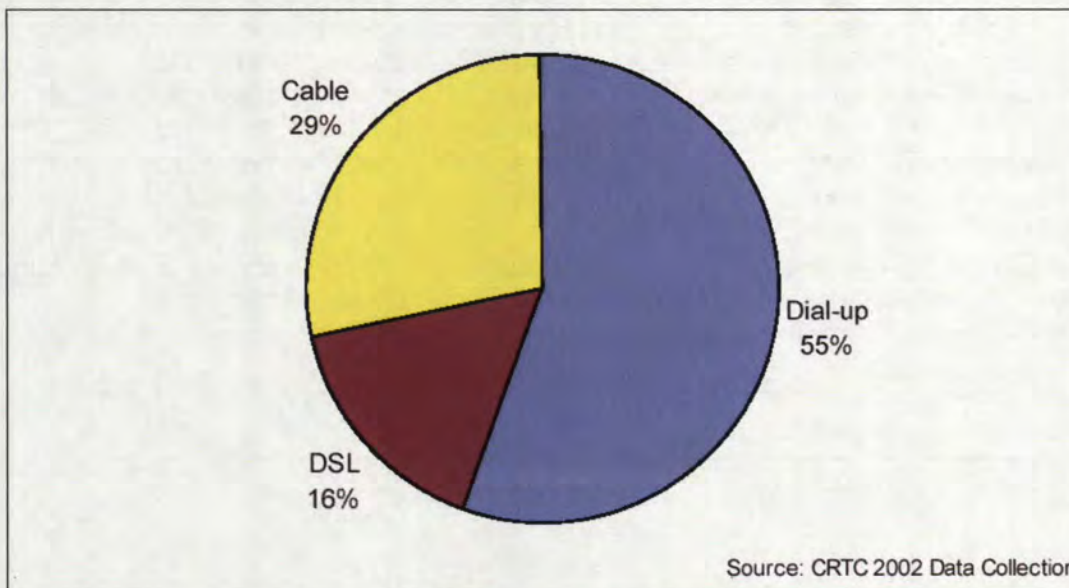


Figure 7: Residential Internet Access Type (Source: CRTC 2002)

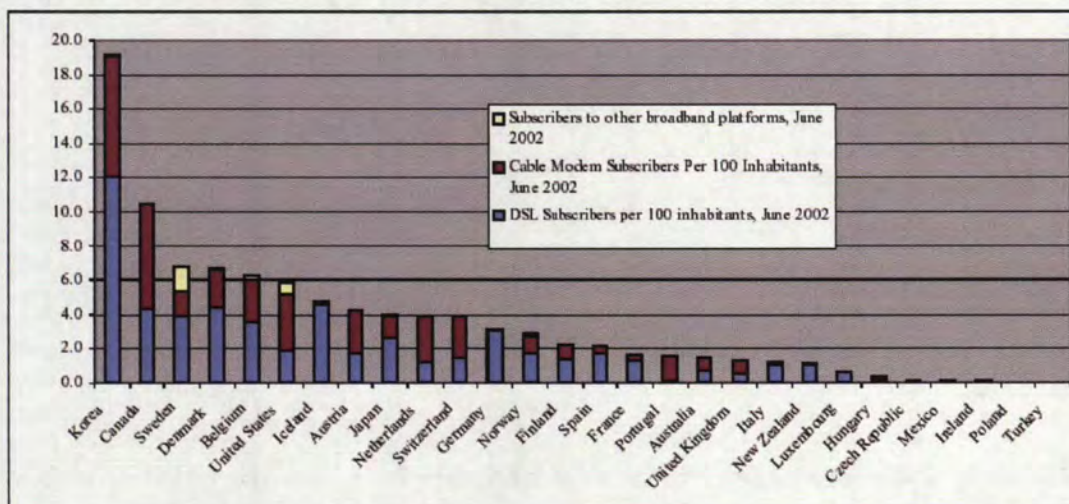


Figure 8: Per Capita Broadband Internet Access (Source: OECD 2002)

¹³ Remarks of Michael K. Powell, Chairman, Federal Communications Commission, Washington, D.C. October 25, 2001. <http://www.fcc.gov/Speeches/Powell/2001/spmcp110.html>

In terms of the cost of accessing the Internet, Canada has long had among the lowest rates in the world. Figure 9 displays Internet access prices in real terms versus the per capita number of Internet hosts. For this particular bundle of services (20 hours of dial-up Internet access, prices inclusive of fixed and variable telephone charges and taxes), Canada has the lowest real cost. Likewise, Canada is in the top 5 countries in terms of number of Internet hosts, indicating that the hosting services of Canadian ISPs are also doing well by international standards. Prices for broadband access are also among the lowest in the world in real terms. A recent study constructed a price index for Internet access in Canada across the years 1993-2000 controlling for improvements in the quality of access over time. (Examples of the changing quality dimensions include the number of hours of connection available per month and the data transfer speeds, both of which increased significantly over time). On average, the quality-adjusted price of Internet access in Canada has fallen at an average rate of 14.8% percent per year (Yu 2003). This finding of a sustained and very rapid rate of price decline indicates that purchasers of ISP services are benefiting from significant price declines over time, likely as a result of both on-going innovation in Internet access technologies as well as competition in the market for ISP services.

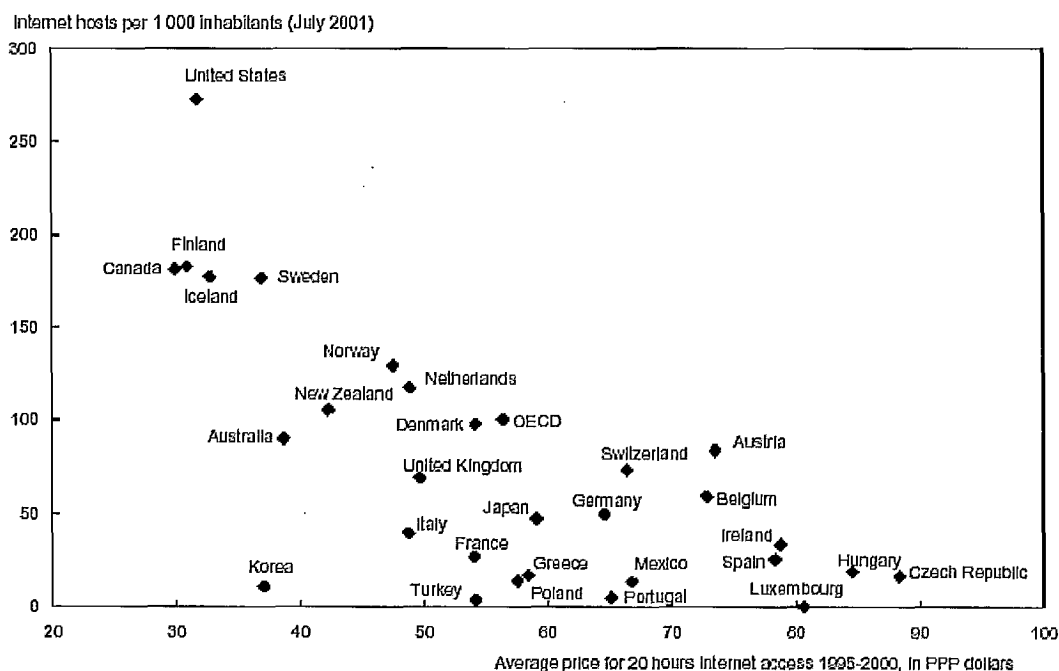


Figure 9: Internet Access Prices and Internet Hosts (Source: OECD 2002)

4.1.3 Canadian Internet Service Providers

There are two levels of Internet service providers. At the highest level, Network Service Providers such as Sprint, Bell, or AT&T provide access to the Internet Backbone through network points of access (NAPs). Internet Service Providers

(ISPs) then connect to any of the NAPs and deliver Internet access to their subscribers be they individuals, businesses, or other organizations. ISPs can also serve other ISPs, which then serve the end consumers. Backbone companies are often vertically integrated and serve as ISPs in addition to providing services to other ISPs.¹⁴

To provide their customers with access to information over the full network (the Internet), ISPs establish relations connecting their networks with those of other ISPs and of Network Service Providers as demonstrated in Figure 10. The two specific types of relations are peering and transit. In a peering relation, ISPs establish direct links between them to transfer packets through their network. Peering can occur at the network access point (between ISP 1 and 2 in Figure 10a) or can be private between two networks (between ISP 2 and 3 in Figure 10a). In either case – the packets are only transferred between the two peered ISPs and not others. In addition, there is no payment involved in a peering relation. In a transit relation (between ISP 1 and ISP 2 in Figure 10b), one ISP pays another ISP (typically a backbone provider) to transfer their packets to a third ISP (ISP 3).

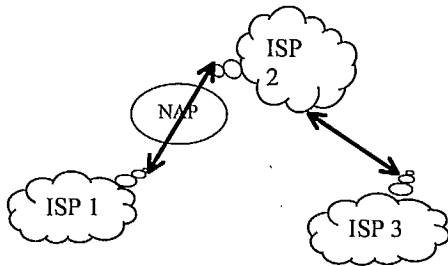


Figure 10a -
Peering

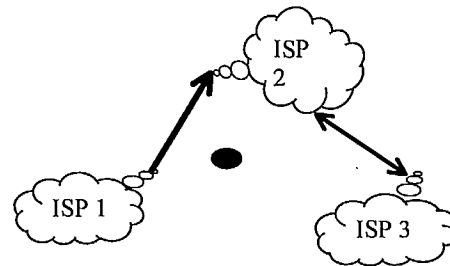


Figure 10b - Transit

Figure 10 – Types of Relations (adapted from Kende 2000)

Establishing peering between ISPs is economical since it does not require payment to an upstream provider for the transfer of packets. However, peering requires significant resources in establishing and maintaining the peering connection. In Canada, 24% of ISPs (mostly the larger companies) have peering arrangements to avoid backbone fees. Specific firms that are most often cited as peering partners are Bell Canada, Group Telecom, and Telus. In addition, Bell Canada and Sprint are the leading backbone providers with 16% and 15% of ISPs respectively. Following are AT&T (10%) and WorldCom/UUNet (9%). In total, 10 backbone providers carry the traffic of 81% of the ISPs.¹⁵ Globally, this market is highly concentrated in 20 carriers - mostly US companies - with

¹⁴ Kende (2000)

¹⁵ Pollara (2002)

AT&T/IBM, Global One/Sprint, GTE/BBN, MCI WorldCom/UUNet and PSINet responsible for 60% of global traffic.¹⁶

In terms of subscription, 44% of Canadian ISPs are "small" having an average of 1,266 subscribers, 40% are "medium" with an average of 2,174 subscribers, and 16% are "large" with 69,329 subscribers on average.¹⁷ A general Industry profile for 2002 is presented in Table 2.

| ISP INDUSTRY PROFILE | |
|---------------------------|---------------|
| Number of companies | 940 |
| Total gross revenue | \$1.7 Billion |
| Average profit per ISP | \$323,264 |
| Operating margin | 12.9% |
| Total number of employees | 5,640 |
| Total subscriptions | 11,768,123 |
| Businesses | ~5 Million |
| Households | ~6.6 Million |

Table 2: ISP Industry Profile (Source: Pollara 2002)

A slightly different view of the industry is presented in Table 3, based on data from the Annual Survey of Internet Service Providers and Related Service performed by Statistics Canada (2003). The large difference in the number of firms identified in the two study primarily relates to a difference in definition. For Pollara, an ISP is any firm that provides Internet access for a fee, whereas Industry Canada defines an ISP as a firm that derives the majority of its revenues from Internet access. Thus, the Pollara definition is more comprehensive, and includes many firms that are excluded by Statistics Canada, such as cable companies, telephone carriers, and any firm for which Internet access is a sideline business.

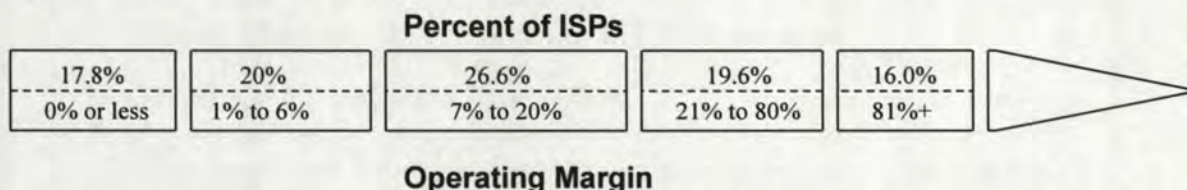
| ISP INDUSTRY PROFILE | 2000 | 2001 |
|---------------------------|----------------|----------------|
| Number of companies | 281 | 256 |
| Total operating revenue | \$1 Billion | \$1.27 Billion |
| Operating margin | -13.9% | -22.2% |
| Total number of employees | 6,488 | 7,357 |
| Total operating expenses | \$1.13 Billion | \$1.55 Billion |

Table 3: ISP Industry Profile (Source: Statistics Canada 2003)

¹⁶ Madden and Coble-Neal (2002)

¹⁷ Pollara (2002)

Figure 11: Operating margins for Canadian ISPs (Source: Pollara, 2002)



It is difficult to get detailed financial data for individual ISPs since the majority of them are privately owned. However, some data is available on average revenues, costs, and profit margins. According to the Pollara report, average revenue per ISP is about \$1.7 million and average profit about \$323,264. The operating margin distribution is presented in Figure 11. Nearly 20% of ISPs are operating at a loss and almost 40% have margins of 6% or less. The Statistics Canada survey presents even more bleak numbers, with average operating margin being -22.2%. The top five operating expenses for 2000 and 2001 as part of total revenue are described in Table 4.

| Operating expenses | % of total revenue (2000) | % of total revenue (2001) |
|---|---------------------------|---------------------------|
| Salaries, wages and employee benefits | 31.5% | 35.8% |
| Telephone and Telecommunications expenses | 19.6% | 28.6% |
| Leased line charges from upstream provider | 17.1% | 12.0% |
| Depreciation and amortization | 13.0% | 9.5% |
| Advertising, sales promotions, travel and entertainment | 7.6% | 10.8% |

Table 4: Operating Costs of ISPs (Source: Statistics Canada 2003)

The ISP industry is characterized by strong economies of scale and scope stemming from the high set-up costs of networks and the relatively low marginal cost of additional subscribers. The primary sources of economies of scale include volume discounts in purchasing of both telecommunications and computer hardware, as well as in procurement of Internet access from upstream providers. As well, simple pooling of demand across subscribers allows large ISPs to function with less hardware and bandwidth per subscriber for an equivalent service level than a very small ISP. In addition, traditional sources of economies of scale (e.g., lower-cost access to capital) are also likely to be present. These characteristics strengthen the advantages of larger size, reach and capacity and push towards mergers and alliances, both locally and globally.¹⁸

In terms of economies of scope, many of the additional services listed in Table 1 utilize the same infrastructure (i.e., telecommunications and computing hardware, Internet bandwidth) that is needed to provide Internet access to subscribers. Indeed, ISPs describe the marginal cost of web hosting as "near zero" once the

¹⁸ Noam (2002)

infrastructure required for Internet access is in place. Since the margins on web hosting are typically much higher than on Internet access¹⁹, these additional services provide badly-needed additional net revenue for ISPs. Indeed, many ISPs note that revenue from these additional services is used to "subsidize" their Internet access services, which often operate at a loss.²⁰ Following these economies of scope, a major competitive strategy in the industry – apart from cost reduction – is the bundling of Internet access with other services. For example, the new On Demand service by Shaw Cable enables customers who subscribe to both Cable TV and cable Internet access to purchase and view movies digitally. As for industry structure, although currently there are a few large ISPs operating in Canada, in the long term it is predicted that following a series of exits and mergers in the network services sector, two companies – Bell Canada and Telus – will position themselves as market leaders.²¹

4.1.4 Competitive Environment

Given that there are between 256-940 firms operating in a \$1.2-1.9 billion industry, one would expect a reasonably competitive market to exist for Internet access. Anecdotally, the degree of price competition is intense.²² The market for dial-up Internet access in Canada has converged to a flat-rate service (i.e., no per-hour usages charges) priced between \$19.95 and \$24.95 per month. While price differences do exist geographically, within regions there is relatively little price dispersion. Urban centres tend to have lower prices than rural areas.²³ Price competition in the urban dial-up segment is described as particularly intense, and churn rates are as high as 12% per month.²⁴ Small ISPs typically feel that their pricing is constrained by the prices of the large competitors, as consumers will not tolerate more than a 5% price difference; as such, small ISPs feel that they are price followers.²⁵ The competitive environment for broadband is also similarly competitive, with prices being set by competition between DSL and cable providers.²⁶

The degree of competition in the ISP industry has been explicitly addressed by the CRTC, which finds:

"The four largest market participants [ISPs] had 51% of all residential Internet subscribers in Canada; the eight largest totalled 72% of the market. ... The four largest,

¹⁹ ISP (1-3)

²⁰ ISP (1-3)

²¹ Gartner (2002)

²² ISP (1-5)

²³ ISP (1-3)

²⁴ ISP (4)

²⁵ ISP (1-3)

²⁶ ISP (4-5)

by retail subscriptions, were Bell Canada, Rogers, Shaw and TELUS. The eight largest also included Aliant Telecom, AOL Canada Inc., Inter.net Canada and Vidéotron.²⁷

Using publicly available data, the degree of concentration in the Canadian ISP industry was assessed. Similar calculations were made for the US ISP industry, and the data used are presented in Appendix 3. In both cases, the "subscriber share" (i.e., the number of subscribers for an ISP divided by the total number of Internet subscribers in that country) had to be used in lieu of market share (i.e., share of industry revenues) due to unavailability of financial data. Thus, a key assumption of this analysis is that revenues are proportional to subscribers; however, due to the aforementioned degree of price competition, this assumption likely reasonable.

Results of this analysis produced "moderate" values for both the concentration ratio ($CR_4 = 51$) and the Herfindahl-Hirschman Index ($HHI = 1105$) in Canada. Although the HHI calculation involved some approximation, a sensitivity analysis indicates the true value lies in the range 1096-1115, which is a relatively small range for an index that can take values from 0 (perfect competition) to 10000 (monopoly). A value of 1105 is on the very low end of the "moderate" range according to US Department of Justice standards (1000-1800), so the Canadian ISP industry is not overly concentrated at this point. However, close attention should be paid to proposed mergers, widespread exit, or other consolidation in the future. In light of the predictions by industry analysts of consolidation and exit, concentration may be a concern in the near future.²⁸

Using a similar methodologies, the indexes are calculated for the US ISP industry. Both the concentration ratio ($CR_4 = 34$) and Herfindahl-Hirschman Index ($HHI = 537$) are in the "low" range of concentration. A similar sensitivity analysis indicates that the true value likely falls in the range 532-543. Thus, the US ISP industry is currently significantly less concentrated than the Canadian ISP industry.

A 1998 survey of Canadian ISPs found that the regulatory environment was not perceived as a significant barrier to growth by most ISPs.²⁹ However, the industry faces a number of technological and legal challenges, from dealing with large volumes of unsolicited commercial email ("spam"), hackers, viruses, worms, harassment of subscribers ("cyber-stalking"), privacy issues, hate literature, and even child pornography. Almost 70% of the companies received complaints concerning spamming, hacking, or harassment.³⁰

²⁷ CRTC (2002), p. 45

²⁸ Gartner (2002)

²⁹ Hillary and Baldwin (1999)

³⁰ Hillary and Baldwin (1999)

4.1.5 Summary of Canadian ISP Industry

The Canadian ISP industry is currently serving consumers well, in terms of availability of products and internationally competitive prices. Indeed, Canada rated second only to the US on the "Connectedness Index," a weighted index of availability, cost, and use of ICT services.³¹ However, the industry is currently operating at an unsustainable level of negative profitability. Although there is a moderate degree of concentration in the industry, price competition appears to be intense, and investment strong. Interviews with industry participants indicate that many of the small ISPs are on the verge of bankruptcy or exit from the industry.³²

4.2 The Content Producing Industries

As noted elsewhere, the Internet represents an unprecedented challenge to the ability of content producers to control their products.³³ It is not surprising, then, that content producers have responded to this threat by lobbying for stronger legal protection of their intellectual property rights, for example through the extension of the term of copyright from 50 to 70 years in the US through the so-called Mickey Mouse bill.³⁴ However, there is an increasingly strong sentiment that the global thrust toward tightening intellectual property rights in favour of rights holders is destroying the balance that IPRs are designed to achieve.³⁵ Even a publication as staunchly conservative as *The Economist* has recently called for a "radical rethink" of copyright, proposing a reduction in term from 70 years to the original 14-year term (renewable once).³⁶

The social and economic issues surrounding copyright and other IPRs are too subtle to be comprehensively reviewed here, but a brief recap of their purposes will be provided. The fundamental problem is that "content"³⁷ has the characteristics of public goods – particularly, it is non-rival in consumption and may be non-excludable.³⁸ Non-rivalry implies that my "consumption" of an idea or a song does not impair the ability of others to consume that idea or song, contrary to most physical goods (e.g., an apple). Non-excludability means that it is impossible to exclude consumers from enjoying the benefits of the public good (e.g., police service). These public good characteristics of content mean that, because creators of content (whether artists, researchers, or inventors) cannot appropriate all of the value created by their work, content will tend to be under-

³¹ Gagnon et al. (2002)

³² ISP (1-5)

³³ Shapiro and Varian (1998)

³⁴ Greenberger and Orwall (2003)

³⁵ See, for example, Gross (2002), Lessig (2001), Litman (2001), and Vaidhyanathan (2001).

³⁶ Anonymous (2003)

³⁷ The terms "content," "information," "ideas," and "knowledge" are considered interchangeable.

³⁸ See, Liebowitz (2002) or Yen (2001) for an introduction to the public goods nature of content.

supplied relative to the social optimum. Intellectual property rights were created to address this form of market failure. It is important to note that the purpose of IPRs is not to increase the appropriability of content for its own sake, or to guarantee “fair” remuneration to content creators, but rather to increase the supply of content in society.

The mechanism by which IPRs address this market failure is to give content creators exclusive rights over the reproduction and distribution of their content for a limited time. This temporary “monopoly” over their content provides content creators an *ex ante* incentive to invest in creating content in the first place. The tension is, however, that once created, content is non-rival in consumption and hence could be shared with all consumers. Restricting the supply for the economic benefit of the creator, *ex post*, creates economic inefficiency. Pharmaceutical patents nicely illustrate the tension between providing incentives for research and development of new drugs (which typically span many years and cost tens or hundreds of millions of dollars), and the *ex post* economic loss of restricting distribution of the new drug to only those consumers who can afford to pay the “monopoly” price. The granting of exclusive rights has always been balanced against the need for efficient transfer of information, and exceptions made for “fair use” (e.g., use of copyrighted materials in review or education, personal backup copies of software, etc). Indeed, the patent process requires full public disclosure of an invention at the time of application so that others may learn from it, even before it has received patent protection.

Although created in “the age of manufacturers,” IPRs have been shown to be quite robust to being adapted to new technologies. Certainly new technologies provide new challenges to IPR holders, but do not, in and of themselves, generally provide a reason to strengthen IPR regimes.³⁹ Copyright holders, for example, have repeatedly raised the alarm over the impending devastation of their industry due to the emergence of a new technology. The photocopier, the audio cassette, and the VCR are particularly noteworthy examples. Each was predicted to spell doom for copyright holders. The now infamous quote by Jack Valenti, president of the Motion Picture Association of America (MPAA) summarizes Hollywood’s initial assessment of the VCR: “[The VCR] is to the American film producer and the American public as the Boston Strangler is to the woman alone.”⁴⁰ However, each of these technologies ended up significantly increasing the value of copyrights and the revenues of copyright holders. Hollywood movies typically earn more in videocassette sales than in theatre box offices; thus, copyright holders have been accused of “crying wolf.”⁴¹

Therefore, one must maintain a balanced level of scepticism in evaluating the claims of copyright holders surrounding the impact of the Internet on their

³⁹ Cockburn and Chwelos (2001)

⁴⁰ As quoted in Yen (2001).

⁴¹ See Liebowitz (2002) for a more lengthy discussion of these issues.

industries. The economic properties of the Internet that “threaten” copyright – reduced reproduction and distribution costs – also provide opportunity for rights holders.⁴² In the US music industry, for example, the costs of producing, distributing, and retailing a compact disk (CD) are estimated to be \$8.39, or nearly 50% of the typical retail price of a CD.⁴³ Thus, alternate distribution strategies could enable profitable sale of music at significantly reduced prices.

A number of business methods for exploiting these opportunities have been proposed that do not require new or amended property rights. These are too large in number to be described fully here, but they include sampling, versioning, customization, frequent updates, zero pricing, volume pricing, and price discrimination.⁴⁴ Alternate appropriability mechanisms, such as group pricing or selling complementary products or services, can also secure revenues for rights holders.⁴⁵ As Shapiro and Varian nicely summarize it, rights holders should be concerned with maximizing the value of their intellectual property, not maximizing the protection of that property. Business methods offer a plethora of alternatives with which to go about maximizing value.

Looking briefly at the phenomenon of digital music downloads, it is clear that the music industry is facing a significant challenge.⁴⁶ A recent study reports that peer-to-peer (P2P) file sharing networks are growing rapidly, and estimates place the number of digital music files downloaded last year at 5 billion.⁴⁷ Although the Recording Industry Association of America (RIAA) claims significant economic harm has occurred due to downloads of digital music from the Internet, such claims are far from being conclusively established. Earlier claims by industry associations regarding the economic impact of physical piracy of CDs turn out to be significant over-estimations when subject to economic scrutiny.⁴⁸ While CD unit sales have slipped in the past four years, prices have increased and the number of new releases has decreased, all at a time of macroeconomic slowdown.⁴⁹ Thus, while it is reasonable to conclude that part of the reduction in sales of CDs is due to digital music downloads, there are clearly other forces at play as well. The fact that CD's are a “luxury” good (i.e., income elasticity is

⁴² Shapiro and Varian (1998)

⁴³ HBS (2002)

⁴⁴ See, for example, Shapiro and Varian (1998), Lessig (2001), Cockburn and Chwelos (2001), Galloway and Kinnear (2001), and Chellappa and Shivendu (2002).

⁴⁵ Shapiro and Varian (1998), Liebowitz (2002)

⁴⁶ The issues are summarized nicely in HBS (2002) and Liebowitz (2002a, 2002b).

⁴⁷ Websense (2003)

⁴⁸ Hui and Png (2002)

⁴⁹ However, one could argue that the reduction in new releases is a conscious choice to reduce investment in producing new releases as a result of reduced (perceived) appropriability.

greater than 1.0) would lead us to expect a significant decrease in unit sales as a result of price increases.⁵⁰

The economic relationship between digital music downloads (typically encoded as MP3 files) and CD purchases has not been conclusively established. Clearly, MP3 files on the Internet are not a perfect substitute for CDs, for a variety of reasons discussed below. It has also been suggested that the relationship between digital downloads and CD sales is complementary, i.e., that after "trying out" songs downloaded from the Internet, consumers choose to purchase some of the music in CD form for a variety of reasons, including higher quality, portability, and even a desire to support the artists. Thus, MP3s, to some level at least, function as free "samples" much the way limited access to online content is used to entice consumers to subscribe to the full service. While the sampling argument has some merit, it is likely that the net effect of MP3s on demand for CDs is negative. However, the magnitude of the effect has not been clearly established, but it is certainly an over-exaggeration to equate one downloaded song with one lost sale of that song on a CD.⁵¹ The ratio of 8:1 (i.e., eight downloaded MP3s result in one lost song sale) have been suggested, but, given the data limitations, this estimate is based on a very informal analysis.⁵²

Reasons that online digital music downloads are not a perfect substitute for a CD include the following: finding and downloading MP3 files requires a significant investment of user time (and therefore opportunity cost), especially for rarer songs or for whole albums; recording quality of MP3 files is variable, but nearly all versions suffer some loss of audio quality relative to CDs; playback of MP3 files is limited to PCs or special devices (MP3 players) or they must be "burned" to blank CDs using a CD writer, a process that requires a significant investment in complementary assets and blank media; MP3 download exposes the user's PC to an unknown level of risk to hacking and viruses; downloading, installing, configuring and using P2P software takes considerable time and expertise, and the lack of user support makes these programs quite difficult to use effectively, in addition, these software programs often install "associated" programs that either collect information on users and upload it for analysis and marketing purposes (so-called "spyware") or stream a high volume of advertisements toward users (termed "adware"), or in some cases, both; many of these "networks" don't work at all or have almost no content on them, and thus require users to download and try multiple P2P networks (indeed, there are estimated to be 130 separate P2P applications⁵³) each of which may install adware or spyware on the user's PC; effective use of P2P networks often require users to search out ancillary

⁵⁰ The figures quoted here are taken from the RIAA's press releases, as well as from secondary analyses, such as Liebowitz (2002b) and Ziemann (2002).

⁵¹ Liebowitz (2002a) provides a detailed discussion of the evidence, including expert testimony, surrounding Napster's (alleged) impact on CD sales.

⁵² Liebowitz (2002b) contains an extended discussion of this issue.

⁵³ Websense (2003)

programs that improve the effectiveness of the searching or downloading, each of which takes time to locate, install, and configure and may require explicit payment or installation of adware or spyware; many users then go on to locate, download, install, configure (and possibly purchase), and update software that searches for and uninstalls spyware and adware – albeit at the expense, in some cases, of rendering the original P2P program inoperative;⁵⁴ finally, MP3 downloads obviously require not only a personal computer but also a (typically broadband) Internet connection.

It is these differences that should give copyright holders hope, in that they represent a whole host of ways that the digital music experience could be improved for consumers. Ultimately, it is by providing a better digital music download service than what is available for free that will entice consumers to pay. Indeed, there appears to be a considerable selection of attributes on which copyright holders could version their legitimate, pay-per-use access to digital music, including: ease of use, lack of additional software, customer support, file format, music quality, search cost, download time, and additional features (album art, lyrics, online chat with artists, contests for concert tickets, etc). The very fact that users are willing to endure significant expense (in terms of Internet access, computing hardware, blank media, risk of damage to their pc, intrusive software and advertisements, and opportunity cost) to download music in admittedly inferior formats indicates that consumer valuation of digital music is quite high. The challenge for copyright holders is to exploit that willingness-to-pay through an appropriate combination of business methods and technology. If the music industry were to enter a “battle” with illegal P2P networks, the nearly complete lack of revenues for unauthorized P2P networks means that they would be unlikely to be able to sustain a serious round of competition to improve features.

Indeed, the music industry has recently developed their own digital music services. The five largest music labels have collaborated on two pay-per-use digital music download services, MusicNet and pressplay, both of which launched in late 2002. Both services appear to be continuing to evolve in terms of service attributes and prices, albeit with very little apparent marketing effort. Likewise, a consortia of music retailers (including Tower Records and Best Buy) has been established to sell digital music online.⁵⁵

Note that these sites represent a potentially very important source of information regarding customer tastes for the music industry. A consequence of widespread use of (legal, industry-sponsored) music download sites would be the generation of vast amounts of data regarding who was downloading what sort of music and when; this data amounts to, in effect, free real-time market research. For example, the effectiveness of radio and other advertising mechanisms could be

⁵⁴ See Hansen and Borland (2002) for a description of adware and spyware and the surrounding legal and technical issues.

⁵⁵ Wingfield (2003)

rapidly and nearly costlessly ascertained by looking at their impact on music searches and downloads. Thus, digital music has the potential to provide new sources of value not only to consumers, but also to the industry as well.

Working in the favour of these pay-per-use music sites is the increasing trend toward pay, rather than "free" (or advertising-supported) content on the Internet. A variety of content providers have recently demonstrated an ability to charge users for content on the Internet, albeit in some cases after experimenting with a variety of business models. (e.g., The Wall Street Journal, The Economist, Salon.com, ESPN, Playboy, Yahoo!). Some of this now pay-per-use content used to be available to consumers for free. Likewise, firms are experimenting with pay-per-use digital download of movies and other broadband content. As the "everything on the Internet is free" mentality of consumers (in part a result of the easy access to cash enjoyed by dot com companies during the Internet bubble) continues to fade, willingness to pay for content will likely continue to rise.

In addition to these business-method approaches to exploiting content, a variety of technical methods are available as well. These include ever-evolving digital rights management (DRM) technologies, such as superdistribution.⁵⁶ These methods have long been proposed, but not widely used. However, with the incorporation of DRM technology in Microsoft's latest release of Windows Media Player (version 9), DRM appears to be becoming mainstream. While these methods, on their own, are unlikely to completely prevent unauthorised copying of content, they can be used to raise the difficulty of doing so. Thus, a combination of technical and business method approaches will likely be required for content holders to maximize their revenues. This combination may be a significant departure from the traditional ways of doing business in some content producing industries, and may require some time to unfold. Finally, note that content holders can use technical methods to "attack" digital download networks (peer-to-peer), which have been shown to be vulnerable to such attacks as a result of their design.⁵⁷ Indeed, there are patent applications under consideration for technologies that flood peer-to-peer networks with degraded content, thereby making it difficult for users to locate and download content.⁵⁸

To summarize, although the music industry is currently a focal point for issues surrounding digital copyright, the Internet is probably not the catastrophe that industry associations are promulgating, for several reasons. First, history tells us that copyright holders have been robust to adapting to new technologies in the past and have ultimately benefited from them. Second, even if the Internet is "different" from other technological innovations, copyright holders have a broad

⁵⁶ Cockburn and Chwelos (2001)

⁵⁷ Biddle et al. (2002)

⁵⁸ See, for example, US Patent Application 20020082999, "Method of preventing reproduction of sales amount of records due to digital music file illegally distributed through communications network."

array of business methods and technologies at their disposal by which to exploit the new capabilities of the Internet as a distribution medium (as well as frustrate illegal downloads). Eventually, adapting to the Internet may significantly redefine the value chain of the music industry, but that reorganization is not necessarily a bad thing. Indeed, musical artists have long felt exploited by record labels, and the Internet may raise their bargaining power.⁵⁹ Ultimately, the hardest hit portion of the industry may not be artists or record labels, but retailers – already a significant number of music retail outlets have closed or are closing.⁶⁰ Third, existing copyright laws already give copyright holders legal options to pursue violators of copyright, as was effectively demonstrated in the court-ordered shutdown of Napster in 2001.

4.3 Current Status of ISP Copyright Liability

4.3.1 Canada

Currently, Canada is considering ISP liability as part of ongoing copyright reform.⁶¹ The actual status of the liability of ISPs under copyright law has not been conclusively established in Canada. Three types of liability for ISPs have been considered: direct liability, vicarious liability, and contributory liability.⁶² Recent case law, *SOCAN v. CAIP et al.*, [2002] F.C.A. 166 supported the exemption of ISP liability under the Copyright Act for ISPs with regard to transmission of musical works. Paragraph 2.4(1)(b) of the Copyright Act outlines the “common carrier” exemption:

a person whose only act in respect of the communication of a work or other subject-matter to the public consists of providing the means of telecommunication necessary for another person to so communicate the work or other subject-matter does not communicate that work or other subject-matter to the public.

This decision by the Federal Court of Appeals (FCA) also determined that it is currently not technologically feasible or is prohibitively expensive and impractical for ISPs to monitor and attempt to prevent transmission of copyright material.

This majority decision by the FCA also ruled, however, that caching of materials by ISPs is neither passive nor necessary, and hence triggers liability.⁶³ This ruling may hold Canadian ISPs liable for payments to Society of Composers,

⁵⁹ Love, (2000)

⁶⁰ Wingfield (2003).

⁶¹ Consultation Paper on Digital Copyright Issues, June 22, 2001; and Supporting Culture and Innovation: Report on the Provisions and Operation of the Copyright Act, October 2002.

⁶² For a thorough discussion of ISPs and the three types of liability in the US context, see Yen (2000).

⁶³ Bernstein and Ramchandani (2002)

Authors and Music Publishers of Canada (SOCAN) retroactive to 1996.⁶⁴ In his dissenting opinion, Justice Sharlow wrote:

The word "necessary" in legislation that is intended to describe the technology of communication must be interpreted with enough flexibility to recognize incremental technological improvements. It seems to me that in the context of paragraph 2.4(1)(b) of the Copyright Act, something should be considered necessary for communication if it makes communication practicable or more practicable, which is the meaning that the Board has implicitly adopted. To insist, as Evans J.A. does in paragraph 135 of his reasons, that something is necessary for a communication only if it is something without which the communication probably would not occur, is to set the bar too high.

ISPs, not surprisingly, tend to support this assessment. ISPs implement caching using automated algorithms that select certain frequently-accessed content and temporarily store it on a local server rather than downloading it from the Internet each time a separate user requests it. This similar function is implemented within many businesses or organizations to improve use of bandwidth. For example, when everyone arrives at work on Monday morning and logs into ESPN.com to check how the local sports teams did over the weekend, the local proxy server likely creates a temporary copy (a "cache") of the ESPN.com homepage so that it doesn't download it from the Internet separately for each user. Note that no system administrator or other human chooses any particular content for caching; rather, software algorithms simply take note of any content that is frequently accessed. Thus, because caching is an automatic function in the sense that there is no human control or selection of the content to be cached, it is, in most interpretations of the word, inherently "passive." The majority of ISPs believe that the majority finding that caching triggers liability represents a misunderstanding of the technological issues surrounding caching on the part of two of the three Justices.⁶⁵

The FCA decision regarding Tariff 22 is under appeal to the Supreme Court, and a number of issues await resolution. First, organizations other than ISPs that implemented caching, including businesses, libraries, and universities, may also be subject to liability for caching. Second, the FCA ruling does not address either rights other than transmission or works other than music. ISP liability regarding reproduction of copyright material by ISP subscribers or for transmission of text, movies, or other types of content thus remain an open question. Third, the common carrier exemption does not apply to embedded links; therefore the issue of liability for linking to infringing material is also unknown.

In summary, therefore, there are a number of uncertainties surrounding the legal status of ISP copyright liability in Canada.

⁶⁴ Wagner (2002).

⁶⁵ ISP (1, 2, 4, & 5)

4.3.2 Other Countries

Currently, the US, Australia, and the European Union (EU) have explicitly provided a limitation of liability for ISPs related to the transmission, storage, and linking of copyright material via the establishment of "safe harbours." Essentially, this approach guarantees that ISPs are not liable for the copyright infringements of their subscribers provided that they meet applicable criteria.

In the US, title II of the Digital Millennium Copyright Act (DMCA), passed in 1998, is the "Online Copyright Infringement Liability Limitation Act." This act limits the liability of online service providers for copyright infringement in four types of activities: transitory communications, systems caching, storage of information on systems or networks at direction of users, and information location tools. The limitation for transitory communications limits the liability of ISPs when acting as data conduits between two or more parties at someone else's request. Limitation for systems caching limits ISPs liability for copies – retained for a limited time – of online material transmitted to a subscriber at his/her own request. The limitation for storage of information on systems or networks limits the liability of ISPs for infringing material on websites hosted on their systems. Finally, the limitation for information location tools relates to hyperlinks, online directories, search engines, and similar applications. This provision limits ISP liability for linking to a site containing infringing material.

Several conditions must be fulfilled for these limitations to apply. First, upon notification of infringing content, the ISP must take down or block access to the material ("Notice and Take-Down"). In addition: (i) ISPs cannot be the initiator of the infringing material or be actively involved in the transfer of such material (i.e., all activities must be automated), (ii) the content of the material transferred or retained may not be modified by the ISP, and (iii) the ISP cannot receive direct financial benefit from the infringing material.

The European Community has drafted similar directives regarding ISP liability. The EU's Copyright Directive and E-Commerce Directive discuss similar aspects of ISP liability as the DMCA and also uses the "notice and take-down" approach.⁶⁶ The EU directives are currently awaiting or undergoing drafting into legislation in member countries.

Australia's new bill – Copyright Amendment (Digital Agenda) Bill 2000 – limits the liability of carriers and ISPs for copyright infringements committed by third parties using their facilities. The CADA states that a person is directly liable for the copyright infringement in a communication only if that person has determined the content of the communication. Therefore, carriers or ISPs are not directly liable for communications of a third party. Nevertheless, in certain cases the provider may be liable by authorizing the infringement. Authorization is determined by the extent of the person's power to prevent the infringement; the nature of the

⁶⁶ Casey (2000)

relationship between the service provider and the infringer; and whether the service provider took any reasonable steps to prevent the infringement. These steps may include compliance with an industry code of practice. The bill states that merely providing the facilities involved in the infringement is not considered authorization.

Finally, the US continues to pressure countries to enact similar limitations of ISP liability that include the "Notice and Takedown" approach. US entertainment industry groups laud such agreements, such as that announced with Chile in December, because the Notice and Takedown provides a framework for content holders to rapidly have infringing material removed from the Internet.

4.4 Impact of Alternatives on ISPs

4.4.1 Status Quo

If the issue of ISP liability is not explicitly clarified by amendment to the Copyright Act, the major issue facing Canadian ISPs is uncertainty over the potential copyright liability they may face in the future, as outlined in Section 4.3.1 above. This uncertainty will have two primary results.

First, ISPs will be forced to either (a) continue to bear this economic risk, perhaps explicitly setting aside funds to deal with any future liability should it arise,⁶⁷ or (b) procure insurance to cover such potential liability, which has only recently become available:

"Chubb, AIG, and the St. Paul Companies are among the first to introduce special 'Internet liability' policies designed to help clients pay settlements or damages if they're sued for posting or linking to material that infringes copyrights, is defamatory, or violates privacy rights."⁶⁸

Most ISPs report that their insurance costs are in fact rising dramatically, even excluding the purchase of copyright liability insurance.⁶⁹

Second, ISPs, especially large ISPs, will face continuing legal costs as they attempt to resolve this uncertainty, in a manner favourable to them, either in the courts or by lobbying for new legislation.

If the issue of liability for incidental caching is upheld by the supreme court it may have serious ramifications. Given the current unprofitability of the industry, such action may have serious competitive implications; indeed, all of the ISPs interviewed indicated that many of the smaller ISPs would be out of business "within the hour" or "immediately" if they were found retroactively liable

⁶⁷ Indeed, CAIP explicitly recommended such a course of action to its members as a precaution should the caching liability stand up to appeal.

⁶⁸ Roush (2003)

⁶⁹ ISP (1, 3, & 4)

at the rates proposed by SOCAN (25 cents per subscriber per month).⁷⁰ As noted in Section 4.1.4 above, the Canadian ISP is already moderately concentrated, and a large-scale exit by small ISPs may seriously harm the level of competition and/or access in the marketplace.

With regard to the international competitiveness of Canadian ISPs, the impact of the status quo is uncertain. If legal uncertainties are resolved according to the "best case" from the perspective of ISPs (i.e., the common carrier exemption for transmission is upheld, and extended to other works, and extended to other rights, and the liability for caching is overturned), then Canadian ISPs will be on equal or perhaps slightly favourable competitive terms with US and other international ISPs. However, if these legal uncertainties are not resolved favourably, they have the potential to put the Canadian ISP industry at a disadvantage with respect to US and other ISPs that have explicit exclusions of copyright liability.

4.4.2 Notice and Takedown

The Notice and Takedown regime has a number of points to recommend it from the perspective of ISPs by providing explicit limitations on copyright liability due to transmission, reproduction, linking, and caching of copyright material. An important component of the Notice and Takedown regime is provision of "safe harbours" or limitation in liability for third party damages caused by an ISP complying with the Notice and Takedown regime. (For example, when an ISP takes down a client's website as a result of a "proper notice" that turns out to be unfounded, the client cannot sue the ISP for damages but can, presumably, sue the author of the notice.)

The downsides of a Notice and Takedown approach, as outlined in the comment on statement from CAIP, are as follows:⁷¹

1. The imposition of an unwanted "quasi-judicial" role on ISPs in judging complex copyright issues between ISP clients and rights holders
2. The erosion of the relationship between the ISP and the client as a result of having to rapidly comply with takedown notices.
3. The administrative and legal costs of complying with the regime, in terms of analysing notices to see if they compliant with regulation, tracking actions taken, and so forth.

One of the objections to the Notice and Takedown approach is that it is a "shoot first and ask questions later" or "guilty until proven innocent" approach that deprives alleged copyright infringers the benefit of due process and judicial

⁷⁰ ISP (1-5)

⁷¹ See "Reply comment from Canadian Association of Internet Providers"
<http://strategis.ic.gc.ca/SSG/rp00798e.html>

oversight. The force of this argument will depend critically on the implementation of the Notice and Takedown system. For example, the US system allows an alleged infringer to file a counter-notification in order to have content reinstated after a 10-day waiting period. The waiting period allows time for the complainant to obtain a court order prior to the content being reinstated. The administrative mechanisms of notice, counter-notice, and waiting periods before takedown (if any) and reinstatement, as well as any accelerated judicial process for obtaining court orders provide for many tools with which legislation can attempt to balance the rights of ISP clients and copyright holders.

In terms of the international competitiveness of Canadian ISPs, the Notice and Takedown approach will likely put Canadian ISPs on nearly identical competitive footing to US and EU ISPs in terms of copyright liability. The ubiquitous nature of the Internet combined with increasing copyright legislation worldwide would make it very difficult for ISPs to cope with varying requirements in different countries. This difficulty enhances the value of a uniform approach towards copyright legislation following the initiatives of the US, Australia, and the European Community.⁷² Thus, the Notice and Takedown approach is unlikely to be harmful to Canadian ISPs and has much to recommend it over the status quo.

4.4.3 Notice and Notice

In its fundamental elements, the Notice and Notice regime is similar to the Notice and Takedown approach in that it provides explicit limitations on copyright liability due to transmission, reproduction, linking, and caching of copyright material. The fundamental difference is that upon receipt of a notice of alleged infringement by one of its clients, the ISP does not takedown the allegedly infringing content, but rather notifies its client of the alleged infringements and facilitates the two parties resolving the issue. The ISP would not reveal the identity of the client to the complainant, but would cooperate with an official investigation.

The primary advantage over the takedown approach from the perspective of ISPs is not putting ISPs in a "quasi-judicial" role that conflicts with the interests of their clients. Legal and administrative costs may be lower than in the Notice and Takedown approach as well.⁷³ From the perspective of ISP clients, the Notice and Notice is also preferred as it is perceived as striking a better balance between the rights of ISP clients and rights holders.⁷⁴

Given the lower administrative and legal costs of the Notice and Notice regime, it may have positive implications for the international competitiveness of Canadian ISPs. Likewise, if the Notice and Notice approach is preferred by clients, Canadian ISPs may benefit by attracting clients from other countries. As discussed in section 4.4.4 below, web hosting is the service most likely to change

⁷² Casey (2000)

⁷³ ISP (1, 4, & 5)

⁷⁴ ISP (1-5)

nations on the basis of different copyright regimes. However, "regime shopping" is not likely to have a significant implication given the similarity between the two approaches. On the whole, the Notice and Notice regime would provide a nearly identical business environment to the Notice and Takedown environment in the US, EU and Australia.

4.4.4 Compulsory Licensing

The compulsory licensing approach is dramatically different from the three previous alternatives in its legal approach. Putting aside the question of legality or constitutionality of such an approach, the technical and economic feasibility of a "targeted tariff" is in doubt. Before discussing feasibility, note that the order of preference for the basis for applying a "targeted" tariff would be:

1. The volume of infringing copyright material
2. The volume of copyright material, whether infringing or non-infringing
3. The volume of file types that typically contain infringing copyright material
4. The total volume of data

This preference ranking is based on economic theory, and the notion that efficiency requires that tariff fall on users of (infringing) copyright material. Each of these four alternatives are considered below.

A tariff on the transfer of infringing copyright material has two associated issues that make it infeasible. First, the ISP would have to determine whether the material being transferred was copyrighted. Because copyright does not need to be registered, there is no central repository of copyrighted material, and thus no resource against which material could be compared to verify whether it is copyright. Second, even if an ISP were able to determine that a file contained copyright materials, the ISP would then have to determine whether the viewer had purchased or was given the right to download that file, or whether they were infringing. Currently, there is no way for ISPs to determine this fact conclusively and at reasonable cost.⁷⁵ The FCA judgement regarding the SOCAN Tariff 22 proposal came to a similar conclusion, noting that it was not technically feasible for ISPs to monitor the copyright status of material flowing across their systems. Because it is impossible for ISPs to determine whether files are copyright or not, both of the first two tariff approaches are infeasible.

The third approach would be to "target" the tariff toward infringing types of files (e.g., MP3) or applications (e.g., P2P systems). Currently it would be technically feasible, although labour intensive, for ISPs to identify the applications that are transferring packets across their networks. The approach would depend on using the conventions that certain applications use certain protocol port numbers

⁷⁵ One could imagine a secure universal system of rights management involving meta-tags for each copyrighted digital file, but such a system is very likely economically and technologically infeasible in the foreseeable future.

when sending and receiving data over TCP/IP networks.⁷⁶ Protocol port numbers can be any number between 0 and 65,536, with numbers for well known applications (numbers below 1024) being assigned by the Internet Assigned Numbers Authority. For example, the P2P services KaZaa and Gnutella use ports 1214 and 6346, respectively. Therefore, it would currently be technically feasible for ISPs to track the traffic across, for example, peer-to-peer networks.⁷⁷ However such an approach has several major difficulties associated with it. First, as the costs of such monitoring would be significant. As noted above, there are currently more than 130 P2P systems in existence, each of which would have to be identified and tracked by each ISP. Likewise, new systems come into existence frequently, and thus the systems used by ISPs to track this traffic would have to be updated frequently. Second, once this data is gathered, the administrative costs of reporting the data, as well as charging, collecting, and remitting the tariff would be significant. Given the enormous volumes of data generated, the costs of administrating such a system would also be significant, therefore bringing the enforceability into question. Therefore, one would expect that such a system would increase the cost of Internet access over and above any tariffs charged to consumers. However, the third issue is perhaps the most significant: P2P systems are evolving rapidly, and could easily be adapted to defeat a simple port-based tracking system. Any of the techniques of encryption and spoofing, as well as randomly changing ports, could make it technically impossible for ISPs to monitor the volume of P2P data flowing across their networks. Indeed, given any economic incentive to do so, one would expect P2P networks to adapt quite quickly and easily to defeat such a monitoring system. One scenario, then, is that a targeted tariff system could designed and implemented (albeit necessarily costly and administratively cumbersome by design) but rendered almost totally ineffective by evolution of the technology it is designed to monitor. Given the relative pace of software evolution versus legislative reform, such a scenario is not unlikely. Thus, the third alternative, though currently at least theoretically technologically possible, is likely an infeasible option due to the associated costs and the likely reaction of software providers.

Therefore, if a compulsory licensing system is to be implemented, it would likely be, by necessity, simply based on the sheer volume of data transferred. Effectively, then, compulsory licensing would be a "bit tax" on data transferred across the Internet by Canadian ISPs. Such a tariff would not have any beneficial economic incentive effects of tying the tariff to the infringing behaviour, and would provide disincentives to all the non-infringing uses of the Internet in Canada.

⁷⁶ TCP/IP is an acronym for "Transmission Control Protocol/Internet Protocol" and are the two primary protocols underlying data transport on the Internet. A reference on assigned protocol port numbers is available at: <http://www.iana.org/assignments/port-numbers>

⁷⁷ An implicit assumption of this approach is that all files transferred across P2P networks are infringing and/or music files; however, it is known that a significant proportion of P2P traffic is in video and image formats.

The method of implementation of a compulsory licensing tariff is unclear, whether it would be a variable cost based on data transferred by ISP, perhaps assessed on a monthly basis, or as a flat rate, presumably based on the number (and possibly access speed) of subscribers. If the tariff is set on the basis of access speed, then the tariff on cable or DSL access could be on the order of 10-16 times as much as the tariff on dial-up access. These different approaches to implementation have different implications for the administrative burden and cost for ISPs, with variable pricing being the most costly.

The economic implications of a compulsory licensing tariff would depend critically on the level of the tariff, which presumably would be set quite low to account for the fact that a great deal of the data flowing across the Internet is either not copyright or is non-infringing. Rates below 0.1% of ISP gross revenue, for example, would not be likely to have a serious economic or competitive impact on Canadian ISPs. However, if the tariff were much higher, perhaps in the range of previous Tariff 22 proposals (1-10% of ISP gross revenue), then the economic implications could be quite serious. The economic impact of such a tariff will be analyzed below, first for Internet access services and subsequently for web hosting.

Recall that margins in the Canadian ISP market for Internet access are either very slim or strongly negative depending on data source (see Section 4.1 above). As such, there is very little slack with which an ISP could absorb such a tariff, and so would have to pass along at least some proportion to subscribers. Interviews with ISPs indicate that they would pass on nearly all of the price increases.⁷⁸

There has been relatively little research on the price elasticity of demand for Internet services, and all of that which has been conducted has been in the US. However, given that the Canadian market is quite similar to the US, and that the timeframe for these studies is quite recent (1999-2001), figures for Canada are likely to be very similar. These studies are all based on online surveys of panels of Internet users, and appear to be rigorous in their data collection and analysis methods. Thus, the estimates of (own and cross-) price elasticity of demand presented in Table 5 represent the best available information on consumer reaction to price changes for Internet access.

⁷⁸ ISP (1-5)

| Base Technology | Own Price Elasticity | Other Technology | Cross-Price Elasticity | Study ⁷⁹ |
|-----------------|----------------------|------------------|------------------------|---------------------|
| Dial-up | -0.372 | none | n/a | RKT 2001 |
| Dial-up | -0.230 | Cable | 0.5180 | RKT 2001 |
| Dial-up | -0.168 | DSL | 0.4230 | RKT 2001 |
| Dial-up | -0.277 | Cable & DSL | 0.7250 | RKT 2001 |
| Cable | -0.895 | Dial-up | 0.0001 | RKT 2001 |
| DSL | -1.364 | Dial-up | 0.0400 | RKT 2001 |
| Cable | -0.587 | DSL | 0.7660 | RKT 2001 |
| DSL | -1.462 | Cable | 0.6180 | RKT 2001 |
| Cable & DSL | -1.491 | Dial-up | 0.0210 | RKT 2001 |
| DSL | -1.184 | Cable | 0.4150 | CS 2001 |
| Cable | -1.220 | DSL | 0.5910 | CS 2001 |
| Cable | -1.290 | Dial-up | 0.1500 | KRT 2000 |

Table 5: Price Elasticity of Demand for Internet Access (Sources Listed)

Although the numbers differ slightly by study and comparison, three broad findings emerge. First, the price elasticity of dial-up access is quite low, indicating an inelastic market. Taking -0.30 as an average estimate means that if the price of dial-up increases by 1%, quantity demanded will decrease by 0.3%. Second, the elasticity of demand for broadband Internet access is much higher, almost certainly greater (in absolute terms) than one, indicating an elastic market. Taking -1.4 as an estimate means that a 1% increase in broadband prices will result in a 1.4% reduction in quantity demanded. Third, the cross-price elasticity of demand for dial-up versus broadband is positive and significantly different than zero, indicating that as the price of broadband increases, the demand for dial-up will increase. Taking 0.6 as the cross-price elasticity of demand for dial-up versus broadband indicates that a 1% increase in the price of broadband will result in a 0.6% increase in the demand for dial-up. Note that the cross-price elasticity of demand for broadband versus dial-up is basically zero, meaning that an increase in the price of dial-up has no effect on the demand for broadband.

Internet access is largely a local or national service, meaning that Canadian consumers cannot readily turn to ISPs outside of Canada for Internet access. However, given a large enough price differential, a grey market would likely emerge, perhaps using wireless or satellite technologies. In the short term, however, international substitution will likely be insignificant, and is hence not considered here.

⁷⁹ RKT 2001 corresponds to Rappaport, Kridel, and Taylor (2001); CS 2001 corresponds to Crandal and Sidak, (2001); KRT 2000 corresponds to Kridel, Rappaport, and Taylor (2000).

Faced with these elasticities, one has to ask how firms will chose to pass on the compulsory licensing costs to subscribers. Not considering the situation of specific firms, the inelastic demand for dialup indicates that the majority of costs will be passed on in the form of higher prices. The elastic demand for broadband, however, indicates that firms will try to pass on a lower proportion of the licensing costs due to the sharp reaction of the marketplace in terms of reduced demands. Note that some of the reduced demand (about half) will end up as dial-up customers.

The Canadian Internet-access market is characterized broadly by three types of firms: (1) firms that offer only dial-up access, (2) firms that offer both dial-up and broadband, and (3) firms that offer only broadband access (typically cable ISPs). Each of these should behave differently, even ignoring "strategic" considerations. Type 1 firms will pass on most if not all of the licensing costs in the form of higher prices. Type 2 firms may choose to allocate more of the licensing costs to dial-up than broadband, perhaps even using dial-up revenues to subsidize the licensing costs for broadband.⁸⁰ Type 3 firms will attempt to minimize the licensing cost passed on to subscribers to the extent possible within their margins.

If one considers strategic behaviour by these three types of firms across a multi-period (but finite) game theory model, the possibility for strategic behaviour by type 2 firms in attempting to force exit of type 1 firms emerges. Likewise, modelling firms of different sizes and financial resources dramatically increases the complexity and strategic possibility of the exercise. Given the heterogeneity of the Canadian ISP industry, explicit game theory modelling was judged to be too much of an abstraction to yield defensible insights. However, the intense competitive environment (in terms of price completion) and the existing concentration of the industry are warnings that real strategic behaviour, likely on the basis of large ISPs, is a likely possibility. For example, large, type 2 firms may initially choose not to pass on license fees (at the cost of increased losses at least temporarily), thereby forcing type 1 firms to either do the same or raise prices and loose market share; either action will likely force insolvency in smaller type 1 firms quite rapidly, at which point larger type 2 firms can raise prices beyond that required to cover the license fee and enjoy economic rents afforded by the increased concentration of the market.

The economic impact of compulsory licensing on ISPs can be summarized as:

1. Increased prices for dial-up access, likely to the full level of licensing costs. Demand will decline moderately (net of downward migration from broadband, on the order of 0.2% for each 1% increase in price of dial-up).

⁸⁰ Of course, if the tariff on broadband connections is 10-16 times the tariff on dialup connections, then a meaningful level of subsidization is impossible.

2. Prices will increase for broadband, perhaps dramatically depending on the application of the tariff. If the tariff is on a bandwidth basis, the tariff on broadband will be 10-16 times that on dialup, and price increases will be perhaps slightly less than suggested by that ratio. Demand will decline significantly (on the order of 1.4% for each 1% increase in broadband prices).
3. Strategic behaviour by large ISPs and/or type 2 ISPs (ISPs offering both dial-up and broadband) may force exit of smaller or type 1 ISPs (ISPs offering only dial-up). The industry will likely become more concentrated, though it is impossible to say to what degree.
4. ISPs will face ongoing legal expense to prepare for and participate in hearings to establish the compulsory licensing tariffs.

The implications of compulsory licensing for Internet access subscribers is discussed below, but it is unlikely that subscribers will be happy about what they will perceive as another tax. ISPs, being the ones to pass the increased costs to consumers, will likely bear significant administrative and customer support costs dealing with complaints.

Web hosting, unlike Internet access, is a highly mobile service. From the point of view of ISP clients, it doesn't matter whether their website is hosted in Canada, the US, or even Barbados. Thus, if compulsory licensing tariffs are applied to web hosting, the implications for Canadian ISPs could be dramatic. Any significant price increase would cause a significant migration of demand out of the country because hosting in other countries is a nearly perfect substitute. Because these services are higher margin than Internet access and are characterized by economies of scope, this lost revenue could significantly undermine the financial viability of Canadian ISPs. Thus, the application of compulsory licensing to web hosting must be considered with extreme sobriety.

In summary, the international competitiveness of Canadian ISPs could be significantly impaired by a compulsory licensing regime. Both the costs of the tariff itself and the associated administration costs will force ISPs, already operating on less-than razor-thin margins, to raise prices. These price increases will result in reduced demand for both broadband and dial-up access, and therefore revenues. Given the precarious financial situation of many ISPs, especially smaller ones, compulsory licensing could be a catalyst for significant exit and/or consolidation within the industry. Given the already "moderate" level of concentration, any further consolidation is worrisome, and may in itself eventually result in a less competitive environment and higher prices for consumers and businesses. In terms of web hosting, an important complementary service for ISPs, compulsory licensing could spell disaster by forcing clients to other jurisdictions that do not levy a tariff on content.

The secondary impacts of compulsory licensing for the ISP industry include reducing the incentives for investment in the industry. As such, the rate of investment in infrastructure and the expansion of access (especially broadband) would slow or stop. Negative impacts beyond the ISP to the information and communications technology (ICT) sector are likely as well, as compulsory licensing will put a "chill" into high-tech sector.⁸¹

Finally, as will be discussed in section 4.5 below, the compulsory licensing approach has negative impacts on other stakeholders, particularly consumers and business clients of ISPs. These impacts may well be regressive, hitting the lowest income and lowest education consumers the hardest. Likewise, the impact of compulsory licensing will frustrate a number of other government objectives, including "connectedness" (equality of access to the Internet by region, income, education) and "innovation" (transition to the knowledge-based economy). Even if the revenue transferred to content providers is considered to be so critical as to outweigh the negative impacts of a compulsory licensing tariff, other approaches (e.g., taxes on use of copyrighted content or even a flat tax) may yield the same benefits for content producers without the significant downside associated with compulsory licensing.

4.4.5 Summary of Impact of Alternatives on ISPs

Currently, significant uncertainty exists in Canada regarding the potential copyright liability of ISPs. The issue of liability for caching of music files is currently before the supreme court, and liability for other works and other rights. As a result, ISPs bear both risk of being found liable (and, if they choose, associated insurance costs) and the legal costs of seeking resolution of that uncertainty. As a result, Canadian ISPs face higher real economic costs than ISPs in jurisdictions with clearly defined exclusions of copyright liability for ISPs.

The Notice and Takedown and Notice and Notice proposals are nearly equivalent in terms of economic impact, although the Notice and Notice program may lead to lower costs and better client relationships for ISPs. However, the Notice and Takedown approach has the advantage of conforming with an emerging international standard, which may lower costs of dealing with different jurisdictions and regimes. Both proposals, depending on implementation, will provide an exclusion of liability for ISPs via the "common carrier" exemption for transmission of materials; in addition, liability for storing, caching, and linking will also be removed provided that ISPs adhere to the requirements set out in the proposals. In terms of international competitiveness, the notice and Notice and Notice and Takedown proposals are nearly equivalent and will both improve the competitive position of Canadian ISPs by removing the legal uncertainty and costs associated with the status quo. In the opinion of CAIP and ISPs, the Notice and Notice regime is preferred to the Notice and Takedown.

⁸¹ ISP (4 & 5)

The compulsory licensing proposal has potentially significant negative economic impacts for the ISP industry in terms of increased administrative and legal costs, the compulsory licensing tariff itself, the resulting increased prices passed on to customers, the reduced demand and revenue, and ultimately possible exit and consolidation. The economic impact will obviously depend on the level of the compulsory licensing tariff, but administrative and legal costs will likely be significant regardless of the level of the tariff. If the tariff is set at an economically meaningful level, ISPs are likely to be at a disadvantage compared to ISPs in other jurisdictions that have exclusions of copyright liabilities. Further, the effects of compulsory licensing are likely to frustrate other government objectives, particularly "Connectedness" and "Innovation."

A ranking of the alternatives in terms of their economic impact is:

1. Notice and Notice and Notice and Takedown both have positive economic impact and beneficial impact on international competitiveness.
2. The status quo has, by definition, no economic impact and leaves Canadian ISPs at a disadvantage compared to US and other ISPs that enjoy a specific exclusion of copyright liability.
3. Compulsory Licensing has the potential, depending on the level of the tariff, to have a very significant negative economic impact and to put Canadian ISPs on a significant cost disadvantage compared to US and other ISPs that enjoy a specific exclusion of copyright liability.

4.5 Impact of Alternatives on Other Stakeholders

The ISP industry is an important part of the telecommunications sector in Canada, and to oversimplify, "what is good for the ISP industry is good for Canada." Investment in information and communications technology (ICT) infrastructure has been shown to have significant consumer welfare and productivity impacts.⁸² Indeed, this is the reason that this sector has been an explicit focus of policy attention. The economic welfare of the ISP industry will thus directly and indirectly affect firms both inside and outside the ICT sector, and ultimately Canadian citizens as well. Therefore, in general, the proposed alternatives that are good for the ISP sector will also be good for other stakeholders. Likewise, the alternatives that harm the ISP industry will both directly and indirectly affect consumers and business subscribers.

The status quo, to the extent that it may find ISPs liable for incidental caching of music, may also assign liability to firms that are not ISPs but engage in ISP-like functions, such as libraries and universities as well as for-profit firms.

⁸² The literature on the productivity impacts of ICT is large; recent work on consumer welfare and productivity includes Bresnahan, (1986), Brynjolfsson (1996) Brynjolfsson and Hitt (2000), Greenstein and Spiller (1997), and Stiroh (2001).

In particular, the compulsory licensing approach has the potential to negatively impact consumers and businesses. First, increased prices of Internet access will result in reduced demand for Internet access, particularly broadband access, due to higher prices. Given the demographics of Internet use, this effect is most likely to reduce access to the Internet among lower income and less educated citizens (see Section 4.1.2 above). Second, ISPs will face lower incentives to invest in expanding access and services, and growth in the “connectedness” agenda will be slowed. Third, firms that develop or depend on Internet technologies may also experience a “chill” in term of investment.

The only argument that supports compulsory licensing is that it will restore the incentive to create content that has been undermined by the Internet. As discussed in Section 4.2 above, the real economic harm of the Internet to copyright holders has yet to be accurately estimated, and it is by no means certain that it outweighs the benefits to society of increased access to content. Neither is it certain that the revenues created by compulsory licensing will create incentives for the creation of new works, given that payment to artists (or, more accurately, firms that have purchased copyrights from artists) are usually allocated based on works already in existence. As has been argued convincingly elsewhere, there is no benefit to society of paying for incentives to create works that already exist.⁸³ Further, if copyright holders for music and film learn how to exploit the Internet for distribution of their content – just as copyright holders of text, images, and other forms of content are currently realizing – then they may, in the near future, be in the interesting situation of finding the market for their own legally licensed content damaged by the licensing tariffs they have lobbied to have imposed. Tariffs will not only decrease the willingness of consumers to pay for content, but will also shrink the overall size of the market of Internet-enabled consumers, particularly those with broadband access, thereby undermining the distribution channels necessary to capitalize on their content.

Perhaps more seriously, the social and legal arguments for imposing copyright liability on ISPs are far from clear. A Canadian consumer could shortly face the situation of subscribing to a digital music site such as MusicNet, paying royalties to access a digital music file, then paying a compulsory licensing tariff to download that (non-infringing) file, and ultimately paying a CPCC levy to record that music file on a blank CD, effectively having paid for copyright three times!⁸⁴ Consumers are unlikely to react positively to such a situation, and incentives for “grey-market” media and services will only increase.

Most Canadians use their Internet connections for email and general web surfing, not targeted copyright infringement.⁸⁵ In short, there are “substantial non-

⁸³ Lessig (2001) makes this point particularly eloquently.

⁸⁴ CPCC is the Canadian Private Copying Collective, the body that sets royalties for blank media including audiocassettes, videocassettes, CDs, DVDs, memory sticks, and hard drives in MP3 players.

⁸⁵ ComQUEST (2002)

infringing” uses of the services of ISPs, which makes the imposition of tariffs of ISPs difficult to defend. Likewise, copyright legislation has long sought to balance the rights of copyright holders with the rights of content users, and to facilitate payment from users to copyright holders. A general tariff on ISPs brings an unrelated third party into the picture, and asks that body to compensate rights holders even though that third party does not use the copyrighted material. Although the constitutionality of CPCC levies has been questioned, they do arguably represent a more just scheme for compensating copyright holders in that these levies are at least collected from users. However, more effort should be made to identify non-infringing uses of blank media and exempt them from levy. Alternately, if it is deemed impossible to identify users of infringing content, then the problem is more appropriately considered a societal one, not an ISP-industry-specific one, and could more equitably addressed through a small tax on all citizens.⁸⁶ Such a tax could raise the same revenues as an ISP compulsory licensing revenue, without the negative impacts on connectedness, innovation, investment, consumer welfare, and economic growth.

Legal scholars have compared the notion of ISP copyright liability to that of holding firearms manufacturers liable for bodily injury or death caused by their products, and noted it would demonstrate an odd reversal of priorities to take more extreme measures to prevent copyright infringement than to prevent bodily harm.⁸⁷ This position is difficult to challenge on legal or logical grounds.

5.0 Summary

The title of the recent Industry Canada report “Supporting Culture and Innovation” captures the essential balance that must be maintained through the process of revising the copyright act to address issues raised by advances in technology. Yes, preserving incentives for the creation of “content” or “culture” are important. Likewise, however, maintaining incentives for investment and use of information and communications technologies are equally important in supporting innovation and Canada’s advancement to a knowledge-based economy.

As mentioned in Section 4.2 above, just as the Internet creates challenges for content-producing industries, it provides unprecedented business opportunities through the new economics of reproduction and distribution. The first concern of public policy should not be “keeping the Internet safe for Hollywood,” but rather maintaining the balance between the public and copyright holders.⁸⁸

This report has considered four alternatives for dealing with copyright reform as it applies to liability of Internet Service providers. It has argued that the status quo, involving significant legal and economic uncertainty, is unsatisfactory. IT has

⁸⁶ Either a flat “poll tax” or a income-based tax.

⁸⁷ Yen (2001a, 2001b)

⁸⁸ Cockburn and Chwelos (2001)

compared two proposals, the "Notice and Takedown" and the "Notice and Notice" approaches, and found both to be beneficial for ISPs and other stakeholders, particularly ISP customers. The proposal of levying a copyright tariff on ISPs is argued to have a negative impact on the ISP industry and its customers, Canadian businesses and consumers. If a compulsory licensing tariff is set at an economically meaningful level, it will certainly result in higher prices for Internet access and thus reduced access to and use of the Internet, reducing "connectedness" and "innovation" and having negative economic impacts in terms of reduced spillovers and economic growth. In the long run, compulsory licensing may even have a negative impact on content producing industries by removing their ability to use the Internet as a low-cost distribution channel.

Thus, it is strongly recommended that the Copyright Act be amended to provide explicit limitations of ISP copyright liability for transmission, reproduction, linking, and caching of copyrighted content under either the "Notice and Notice" or "Notice and Takedown" proposals.

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Appendix 1: Profile of ISP Respondents

| Name | Size | Subscribers | Employees | Revenues |
|-------------|-------------|--------------------|------------------|-----------------------|
| ISP 1 | Small | 2,001-5,000 | 1-5 | \$0.5 - \$1.0 Million |
| ISP 2 | Small | 5,001-10,000 | 21-30 | \$2.0 - \$3.0 Million |
| ISP 3 | Small | 2,001-5,000 | 11-20 | \$0.5 - \$1.0 Million |
| ISP 4 | Large | > 200,000 | > 200 | > \$100 Million |
| ISP 5 | Large | > 200,000 | > 200 | > \$100 Million |

Appendix 2: ISP Questionnaire

| | | |
|-----------|--------------|-------|
| Company: | Interviewee: | |
| Position: | Date: | Time: |

Introduction

- Name, qualifications, contact from CAIP
- Purpose of report, confidentiality
- 30 minutes

Questions

| |
|---|
| 1. Are you aware of the current status of ISP copyright liability in Canada? (Tariff 22, common carrier exemption, caching, SOCAN, retroactive tariff, appeal) |
| 2. To the best of your knowledge, what steps is your firm taking to deal with the issue of potential ISP copyright liability? |
| (a) Are you aware of copyright liability insurance? Does your firm subscribe? |
| (b) Does your firm have in-house or other legal counsel that deals with the issue of copyright liability? |
| (c) What do you feel would be the impact on Canadian ISPs if they were found retroactively liable for copyright infringement due to incidental caching? |
| 3. Are you aware of proposed changes to copyright law that would affect ISPs? To the range of alternatives being considered? (Notice & Takedown, Notice & Notice, Compulsory Licensing) |
| (a) Does your firm have an preferred alternative? |
| (b) How would your firm's customers react to each of these alternatives? |
| (c) What additional costs do you feel would be created for ISPs by each of these alternatives? By what % do you think operating costs would rise? |
| 4. Are you aware of the state of legislation in other countries? (US, Australia, and EU have adopted or are adopting an explicit limitation on liability, provided a number of conditions are met. Amounts to variations on Notice & Takedown. Do you feel that the competitiveness of Canadian ISPs will be affected if they do not adopt a limitation on ISP liability? If so, how? |
| (a) Web hosting |
| (b) Internet access |
| 5. Do you feel that the competitiveness of Canadian ISPs will be compromised if Canada adopts any of the proposed changes? (Notice & Takedown, Notice & Notice, Compulsory Licensing) |
| 6. Most of the proposed changes will create some level of additional costs for ISPs, albeit with the benefit of a limitation of liability. Suppose that your firm's operating costs were to increase by x% of revenues. How much of this cost would you pass on to customers in the form of higher prices? (If not the whole amount, why not?) |
| 7. If your firm raised the price of its ISP services x%, how would customers react? |
| (a) How much would quantity go down? |
| (b) Would total revenues increase or decrease? How much? |
| (c) Has your firm ever done any research on customer reaction to price increases? (Elasticity of demand?) Or is your pricing largely constrained by your competitors? |

| |
|---|
| <p>8. As I said, I'm writing a report on the economic impact of proposed changes to copyright legislation as it affects ISPs. This is one of several reports, each looking at the impact of these proposed changes on a different stakeholder. In order to make an accurate assessment of the economic impact of proposed changes, I would like to look at a very aggregate picture of your firm's financial operations. Basically, I would need a picture of the dollar value of your gross inputs (hardware, labour, overhead, etc.) and outputs (revenue, customers, bytes served). Would your firm be willing to provide this data for the previous financial year? Remember that of this data will be treated as strictly confidential, and individual firms will not be identified in any of the reports.</p> |
| <p>(a) If not, could you please provide some basic information about your firm so that I can characterize it for our report? What is your approximate number of customers?</p> |
| <p>(b) Number of employees?</p> |
| <p>(c) Number of physical offices?</p> |
| <p>(d) Number of points of presence?</p> |
| <p>(e) Approximate revenues?</p> |

Conclusion

- Thank-you for your time and your opinions

Appendix 3: Data and Methods for Assessing Concentration

Data:

| Canada ⁸⁹ | |
|--------------------------------|-------------|
| ISP | Subscribers |
| Bell | 1,500,000 |
| Telus | 670,000 |
| Shaw | 596,000 |
| Rogers | 479,000 |
| Videotron | 284,000 |
| Alliant | 263,000 |
| AOL Canada ⁹³ | 230,000 |
| Inter.net Canada ⁹⁴ | 150,000 |
| Look | 118,000 |
| Cogeco | 108,000 |
| SaskTel | 106,000 |
| MTS | 97,000 |
| Primus | 60,000 |
| Other Canadian ISPs | 1,039,000 |

| US ⁹⁰ | |
|------------------------------|-------------|
| ISP | Subscribers |
| America Online ⁹¹ | 32,000,000 |
| MSN | 9,000,000 |
| Earthlink | 4,800,000 |
| United Online ⁹² | 4,800,000 |
| SBC/Prodigy | 3,700,000 |
| AT&T Broadband | 1,900,000 |
| Verizon | 1,600,000 |
| BellSouth | 1,600,000 |
| Comcast | 1,300,000 |
| Cox | 1,300,000 |
| Charter | 1,100,000 |
| Cablevision | 680,000 |
| Adelphia | 550,000 |
| Quest | 530,000 |
| RCN | 460,000 |
| Covad | 360,000 |
| Hughes | 300,000 |
| Other US ISPs | 83,000,000 |

Methods:

In the Canadian market, the top 13 firms account for approximately 4.6 million subscribers out of a total market of 5.7 million.⁹⁵ In order to estimate the HHI, the remaining subscribers must be distributed across the remaining 927 ISPs.⁹⁶ Three methods were used to do this, and the HHI was calculated for each. The most realistic approach uses an exponential decay function to distribute the

⁸⁹ Source: CRTC (2002).

⁹⁰ Source: ISP Planet, "Top U.S. ISPs by Subscriber: Q3 2002," http://isp-planet.com/research/rankings/usa_history_q32002.html

⁹¹ Includes subscribers for CompuServe and Road Runner, which are owned by AOL.

⁹² Includes NetZero and Juno Online.

⁹³ Source: ISP Planet "Top Canadian ISPs by Subscriber," <http://www.isp-planet.com/research/rankings/canada.html>

⁹⁴ Missing data, interpolated from adjacent values.

⁹⁵ CRTC (2002)

⁹⁶ Pollara (2002) identifies 940 ISPs in Canada.

remaining subscribers across smaller ISPs, and results in an HHI of 1105. Alternatives designed to produce the maximum and minimum HHI distributed the remaining subscribers using two other methods. For the maximum, it was assumed that ISPs 14-31 all had the same number of subscribers as ISP 13, and ISPs 33-940 each had one subscriber, and the remainder necessary to total 5.7 million was allocated to ISP 32. This approach produced an unrealistically large HHI of 1115. For the minimum approach, ISPs 14-940 were each assigned the same number of subscribers, chosen as the average number of subscribers required to total 5.7 million. This approach produced an unrealistically small HHI of 1096. Thus, we can be quite confident that the true HHI falls in the range 1096-1115.

For the US market, similar methods were used to distribute the remaining 83 million subscribers across the estimated 9,800 US ISPs.⁹⁷ The same sensitivity analysis approach produced a range of 532-543, with the exponential estimate being 537.

⁹⁷ The estimate of 9,800 US ISPs comes from CyberAtlas,
http://cyberatlas.Internet.com/big_picture/geographics/article/0,1323,5911_151151,00.html

