

**BEFORE THE CANADIAN RADIO-TELEVISION
AND TELECOMMUNICATIONS COMMISSION**

**IN THE MATTER OF AN APPLICATION BY
CANADIAN ASSOCIATION OF INTERNET PROVIDERS**

**PURSUANT TO PART VII OF THE
CRTC TELECOMMUNICATIONS RULES OF PROCEDURE
AND SECTIONS 7, 24, 25, 27, 32, 36 AND 62 OF THE
*TELECOMMUNICATIONS ACT***

**REQUESTING CERTAIN ORDERS DIRECTING BELL CANADA
TO CEASE AND DESIST FROM “THROTTLING” ITS
WHOLESALE ADSL ACCESS SERVICES**

Commission File No.:8622-C51-200805153

**Comments Submitted by
SKYPE COMMUNICATIONS s.a.r.l.**

12 June 2008

Table of Contents

I.	INTRODUCTION.....	1
II.	ABOUT SKYPE AND P2P.....	2
III.	THE APPLICABLE POLICY FRAMEWORK.....	6
IV.	THE RECORD OF THE PROCEEDING.....	11
V.	CONCLUDING COMMENTS.....	13

I. INTRODUCTION

1. On 3 April 2008 the Canadian Association of Internet Providers (“CAIP”) filed an application with the Commission pursuant to sections 7, 24, 25, 27, 32, 36, and 62 of the *Telecommunications Act* and Part VII of the *CRTC Telecommunications Rules of Procedure* requesting that the Commission issue certain orders directing Bell Canada to cease and desist from “throttling” wholesale ADSL services and in particular its Gateway Access Service (“GAS”).
2. On 14 May 2008 the Commission issued Telecom Decision CRTC 2008-39, denying certain interim relief requested by CAIP. The Commission set out a process for final disposition of the CAIP application in its letter of 15 May 2008. These comments are submitted by Skype Communications s.a.r.l. (“Skype”) in accordance with that process.
3. The CAIP application raises important issues for the future of Internet service delivery including:
 - (a) whether network operators and network access providers (“network providers”) should be permitted to introduce certain traffic shaping practices;
 - (b) where traffic shaping practices are warranted, what regulatory policies and what protections should guide their implementation; and
4. The CRTC has before it a specific instance of traffic shaping that requires investigation and resolution; but the outcome in this important proceeding will have broad implications on innovation policy in Canada and the openness of the Internet. In Skype’s view, resolution of the instant proceeding should be guided by three core ideas: balance, proportionality and consumer empowerment.
5. In comparing Bell Canada’s traffic shaping techniques to the applicable legal standards, the CRTC should balance the network operator’s legitimate interest in managing its network against Skype’s *equally* legitimate interest in reaching its users on an open Internet free of unreasonable discrimination. The growth of the Internet as an engine of economic empowerment and innovation for Canadians depends upon an ecosystem ethic, where network operators and application providers create a virtuous cycle of mutually reinforcing investments. Consumers will demand more network operator bandwidth if

they have innovative applications, such as Skype, to run on those networks. Conversely, Skype consumers depend on high-quality, non-discriminatory access to the Internet to enable free online conversations. The outcome in this proceeding should keep in mind *both* sides of the Internet investment equation and equally balance network operator and Internet application developer interests.

6. If the CRTC authorizes some level of traffic shaping, it should ensure that traffic shaping responses are proportional and are the least restrictive means to address a particular congestion issue. In particular, the CRTC should declare application-specific throttling techniques, such as outright bans on P2P traffic, presumptively unreasonable. Because of informational asymmetries, the CRTC should continue to require that network operators carry the burden of proving that a given network management technique is narrowly-tailored and application-neutral.
7. The Internet has become a powerful communications medium because it empowers consumers to personalize their communications as they see fit and enables users to choose from a variety of different applications. Network management techniques, such as those identified by CAIP, that move the control point from the end user to the network operator raise serious concerns because they move away from the end-user empowerment principle upon which the Internet was built. Skype respectfully requests that the CRTC ensure that whatever outcome is produced in this and related proceedings should favour consumer choice above all other interests.
8. As discussed above, a balanced approach to network management leads Skype to acknowledge that some level of traffic shaping may be necessary to solve acute congestion challenges in contention scenarios. However, some forms of traffic shaping practices can result in significant degradation of service for Internet users, applications and competing service providers. Skype submits that implementation of traffic shaping practices of the sort dealt with in this proceeding should be subject to strict regulatory review to ensure they are consistent with the public interest. In this regard, the Commission should ensure that such measures are consistent with subsection 27(2) and

other provisions of the *Telecommunications Act*. To ensure such consistency, Skype submits that the following requirements should be met:

- (a) the network provider must clearly demonstrate both the need to implement traffic shaping practices and that the proposed measures are a proportionate and effective response to the demonstrated problems;
- (b) network providers must not be allowed to become “gatekeepers”, selecting the Internet applications or content available to consumers (other than in accordance with laws of general application);
- (c) network providers must not be allowed to give their own applications or content a priority or preference over third-party applications or content, or to subject any applications or content provider, or Internet user, to undue or unreasonable disadvantage; and
- (d) network providers should be required to consult with Internet service providers that rely on their access services prior to implementing traffic shaping practices, with the objective of limiting or managing the negative impact of the intended measures on those service providers and their end user customers.

II. ABOUT SKYPE AND P2P

- 9. Skype is the leading global internet communications company. As a software company registered and based out of Luxembourg, Skype has no operations outside of Luxembourg, aside from a software development center in Tallinn, Estonia and local marketing consultancies in a few locations around the world.
- 10. Skype makes it easy for users to communicate over the public Internet in a variety of ways. When it is installed, Skype software enables a “multi-modal” communications environment: instant messaging, voice, high-quality video, SMS, file transfer etc. These modes are provided free or at affordable rates, via user-generated peer-to-peer protocol over the public Internet. Most importantly, Skype operates as a compliment to consumers existing phone and Internet access service. It is not a replacement for Canadian consumer’s primary phone service.
- 11. To use Skype software, end users download and install the software application (called the “client user interface”) from Skype’s Luxembourg website onto their computers, and accept Skype’s end-user license agreement upon installation on a “click-wrap” basis. Skype is peer-to-peer software, where communication takes place via a peer-to-peer

infrastructure made up of end user computers. The data is then transmitted over the internet by the user, through the Skype client user interface.

12. Each user's personal computer functions as the Internet-equivalent of its own switching device, which acts as an enabler for communication with other users. The communication is self-provided, since each user controls and operates the software independently. This is a unique feature of the Skype software. As a software licensor, Skype has no role to play in the transmission of data between its users. Skype does not operate centralized servers conveying real-time communications data, nor does it own or control any data network or telecommunications equipment.
13. The typical Skype user associates the Skype experience with free expression, enhanced functionality and interactivity, and software simplicity. This is also unique to Skype software - being an enabler of free expression through unlimited voice, video, file transfer and instant messaging between the users of Skype software. The Skype user community is supported by a growing ecosystem of software developers independently creating "plug-ins" aimed at providing greater functionality, improved accessibility and usability for Skype software.
14. The nature of peer-to-peer (P2P) software can be mistakenly used to describe one user linking with multiple users to transfer files particularly MP3s, videos, images, games and other software. While some P2P networks are used for file sharing, this is only one type of P2P network. P2P software technology makes it possible to share various types of information. Skype for example, does not enable "file sharing" but rather includes a point-to-point file transfer capability.
15. P2P architecture is but one example of distributed computing. Another example is the BOINC framework where large problems can be divided into smaller problems, which are in turn distributed to many computers. The main feature of distributed computing is enabling the connection of users and resources in an open, transparent and scalable way. Skype and Joost are examples of technology that has facilitated and enabled the creation of distributed computing networks to benefit online consumers.

16. Skype's innovative peer-to-peer software protocol makes this possible by eliminating the high costs of central server farms and leveraging the computing resources of its end-users. As explained in paragraph 10 above, the term P2P network is perceived to be associated with illegal music file transfer. The majority of Skype users make PC-to-PC calls, namely voice communications between one user computers with another user. In the same way, Skype users make use of the file transfer feature for one-to-one sharing rather than one-to-many. It is important to distinguish the service from the technological means. This distinction is intentionally blurred by various interest groups to achieve a commercial advantage through the negative association of P2P technology with illegal or unethical activity. This ignores the innovation and consumer benefits of the underlying technology and architecture. Most important of all, this ignores that consumers want to use peer-to-peer services to share photographs, music and other user-generated content legally.
17. Skype does not put unreasonable pressure on network bandwidth or undue strain on corporate networks. The average Skype software client when in voice call mode, it will use between 8-20 kilobytes per second (kpbs). In a survey of peer-to-peer traffic on the Internet conducted by the German based network analysis company ipoque in 2007, Skype was described as a low-bandwidth application accounting for 2% of the overall traffic in some networks.
18. Skype is one compelling example of an innovative technology facilitated by the neutral architecture of the Internet, which allows any company – large or small – to offer applications, content or services. Without enforceable network neutrality rules, new entrants such as Skype and other start-up companies may find it difficult or impossible to make their services available to consumers because the preconditions to market entry will be determined by the network provider. With network neutrality and the CRTC's pro-consumer review of non-neutral network management techniques, this entry barrier is reduced and consumers will benefit as they will be able to satisfy their needs in the marketplace by using the applications, services and content of their choice. It is in the public interest to protect innovation and consumer choice by ensuring that the Internet remains open and neutral.

19. The Federal Communications Commission (FCC) has recognized the potential for anti-competitive activity in this area, and has acted to enforce basic net neutrality protections against operators.¹ The FCC has also imposed a net neutrality condition on two of the dominant suppliers of broadband services as part of its review of the SBC/AT&T and Verizon/MCI transactions. In addition, the FCC is currently investigating network management practices employed by Comcast that may be substantially similar to the techniques identified by CAIP.
20. The FCC adopted a policy statement (FCC 05-151, August 5, 2005) outlining a number of principles intended "to encourage broadband deployment and preserve and promote the open and interconnected nature of [the] public Internet." The policy statement includes the principles that:
- consumers are entitled to access the lawful Internet content of their choice
 - consumers are entitled to run applications and services of their choice, subject to the needs of law enforcement
 - and provide for the ability of a network operator to manage its network.
21. In furtherance of this Policy Statement, the FCC has investigated a petition against Comcast to stop P2P blocking in the United States.² This demonstrates that there is increasing awareness on the part of consumers to seek protection of their rights against harmful and deceptive network management practices. Industry, academia and consumer groups are becoming organized for the detection, analysis and incident reporting of "*anti-competitive, discriminatory or other restrictive actions on the part of access providers or their affiliated entities, such as blocking or disruptive manipulation of applications,*

¹ See, for example, the Madison River Consent Decree, available at <http://www.fcc.gov/eb/Orders/2005/DA-05-543A2.html>.

² <http://www.ecommercetimes.com/story/60125.html> US consumers supported by internet advocacy groups and several academics filed a petition with the Federal Communications Commission (FCC) to stop Comcast from the blocking of P2P traffic.

protocols, transmissions or bandwidth; or other similar behaviors not specifically requested by their customers.”³

22. For the Internet to remain innovative, and continue to deliver productivity gains for consumers and businesses, the CRTC must act – in this proceeding – to protect the interest of consumers. End-users must continue to enjoy unrestricted access to the Internet with the ability and freedom to access the Internet content of their choice, to use applications relying on Internet access of their choice, and to access and functionally use software and services provided by third parties via the Internet.

III. THE APPLICABLE POLICY FRAMEWORK

23. The questions under consideration in this proceeding are closely related to the issue of network neutrality – an issue that is not specifically dealt with in the current Canadian legal and policy framework for telecommunications. However, this framework provides the Commission with general policy guidance and with ample authority to develop regulatory rules that protect the public interest by prohibiting inappropriate traffic shaping practices.
24. The general objectives of Canadian telecommunications policy are set out in section 7 of the *Telecommunications Act*. Those objectives include the provision of “reliable and affordable telecommunications services of high quality accessible to Canadians ...” (paragraph 7(b)), an objective that would be undermined if traffic shaping practices were permitted to degrade the speed, reliability and quality of Internet communications. In addition, paragraph 7(h) provides that it is an objective of Canadian telecommunications policy “to respond to the economic and social requirements of users of telecommunications services”. The Internet has become central to the economic and social life of a large proportion of Canadian users. The legitimate requirements of these users would be jeopardized by the implementation of inappropriate traffic shaping practices – practices that degrade the quality of Internet transmissions or jeopardize the availability of innovative and competitive new Internet applications and services.

³ <http://www.nnsquad.org/> The Network Neutrality Squad (NNSquad) is an open-membership, open-source effort, enlisting the Internet's users to help keep the Internet's operations unhindered from unreasonable restrictions. Suspected or confirmed Internet neutrality-related incidents can be reported and are discussed at - <http://forums.pfir.org/main/messages/714/717.html?1195571186>.

25. Subsection 27(2) of the *Telecommunications Act* provides additional legislative guidance to the Commission on how to deal with traffic shaping issues and, more generally, issues of network neutrality. This subsection clearly prohibits a Canadian carrier, such as Bell Canada, from adopting traffic shaping practices that give it an undue or unreasonable preference over services provided by other Internet service or applications providers.⁴ This subsection also prohibits Canadian carriers from subjecting any person, including an Internet service or applications provider, or an Internet user, to an undue or unreasonable disadvantage.
26. Subsection 27(4) of the *Telecommunications Act* clearly places the onus on Canadian carriers, such as Bell Canada, to establish that any discrimination inherent in its traffic shaping practices is not unjust, and that any preference or disadvantage is not undue or unreasonable.⁵
27. As parties to this proceeding have indicated, section 36 and other provisions of the *Telecommunications Act* also place some constraints on the traffic shaping practices that Canadian carriers are permitted to adopt.⁶
28. The legislative and policy framework set out in the *Telecommunications Act* has been supplemented by the “Policy Direction” issued by the Government of Canada to the Commission on December 14, 2006.⁷ The Policy Direction requires the Commission to regulate carriers’ network interconnection and access arrangements in a manner that ensures technological and competitive neutrality. It also requires such regulation to enable competition from new technologies and not to artificially favour either Canadian carriers or resellers.⁸

⁴ Subsection 27(2) provides that : “(2) No Canadian carrier shall, in relation to the provision of a telecommunications service or the charging of a rate for it, unjustly discriminate or giving an undue or unreasonable preference toward any person, including itself, or subject any person to an undue or unreasonable disadvantage.”

⁵ Subsection 27(4) provides that: “(4) The burden of establishing before the Commission that any discrimination is not unjust or that any preference or disadvantage is not undue or unreasonable is on the Canadian carrier that discriminates, gives the preference or subjects the person to the disadvantage.”

⁶ Section 36 provides that: “Except where the Commission approves otherwise, a Canadian carrier shall not control the content or influence the meaning or purpose of telecommunications carried by it for the public.”

⁷ “Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives”, SOR/2006-335

⁸ The preamble and subparagraph 1.(b)(iv) of the Policy Direction state:

29. In summary, while the current Canadian telecommunications legislative and policy framework does not specifically deal with the issue of traffic shaping, by name, the framework clearly requires the Commission to ensure that Canadian carriers' telecommunications services, interconnection and access arrangements:

- do not prevent Canadians from accessing high quality telecommunications services;
- respond to the economic and social requirements of telecommunications users;
- do not unjustly discriminate against any person or subject them to any undue or unreasonable disadvantage;
- do not grant the serving carrier any unreasonable preference for its own services over those of other services or applications providers;
- place the onus on Canadian carriers to demonstrate any discrimination is not unjust and any preference or disadvantage is not undue or unreasonable; and
- are technologically and competitively neutral.

As Skype understands it, all of these legislative and policy guidelines must be taken into account by the Commission in developing its regulatory policies and approaches to traffic shaping, and to network neutrality generally.

30. Skype submits that these legislative and policy guidelines should cause the Commission to ensure that consumers and businesses can continue to enjoy unrestricted and open access to the Internet.

31. Network neutrality rules could be far less burdensome on both government and industry while still preserving the principle of non-discrimination that has been crucial to the development of telecom networks and the Internet. Network neutrality rules should establish that a network operator cannot block, degrade or discriminate against lawful

“In exercising its powers and performing its duties under the *Telecommunications Act*, the Canadian Radio-television and Telecommunications Commission (the “Commission”) shall implement the Canadian telecommunications policy objectives set out in section 7 of that Act, in accordance with the following:

...

(b) the Commission, when relying on regulation, should use measures that satisfy the following criteria, namely those that

...

(iv) if they relate to network interconnection arrangements or regimes for access to networks, buildings, in-building wiring or support structures, ensure the technological and competitive neutrality of those arrangements or regimes, to the greatest extent possible, to enable competition from new technologies and not to artificially favour either Canadian carriers or resellers;”

content, and must treat all traffic in the same manner in which it treats its own or affiliated traffic. Such rules would not prevent network operators from managing their networks, protecting network security, protecting users' privacy, or keeping users from violating applicable laws so long as those network management techniques do not lead to anti-competitive consequences. Even in an environment where there is a competitive Internet access marketplace, network neutrality rules are needed to prevent unreasonable interference with Internet content or applications, or favouring some content or applications over others including for anti-competitive purposes. While competition among network operators may serve to reduce anti-competitive actions, operators may still discriminate against unaffiliated content and service providers that rely on the Internet to deliver their content and services. A set of simple network neutrality rules that codify a basic principle of non-discrimination represent "best practice" and will ensure that the many benefits of the Internet are preserved.

32. Additionally, network neutrality rules could permit network operators to charge end-users different amounts for different levels of service (measured by speed and/or bandwidth) as long as they do not limit or restrict access to Internet content and applications. It must be left to consumers to pick winners and losers in the Internet space, not network operators.

IV. THE RECORD OF THE PROCEEDING

33. It is not clear from the public record of the proceeding that Bell Canada has demonstrated the existence of a network congestion problem sufficiently serious to support the implementation of its traffic shaping practices. As noted in paragraphs 21 and 24 of the CAIP Reply, Bell Canada's Answer provides no specific information regarding the measurements taken or other statistical analysis of the network congestion problem that it relies on to justify its traffic shaping practices. Although Bell Canada has provided additional information in its interrogatory responses regarding its measurement practices, utilization thresholds and related network congestion, much of this information has been filed with the Commission in confidence and does not appear in the public record of the proceeding.

34. It is also not clear from the record whether Bell Canada's traffic shaping practices are having inappropriate or disproportionate effects on the delivery of Internet applications, content or services other than the intentional delay of some forms of P2P file transfers during peak periods.
35. Bell Canada's response to Bell Canada (CRTC) 15May08-6 CAIP Part VII includes the following statement:

Therefore, when it comes to using DPI for shaping P2P file sharing traffic, it is important to have the appropriate signatures for the targeted applications configured into the DPI device. For example, many refer to Skype as a form of P2P because it uses certain communication mechanisms similar to P2P, i.e. it makes a connection from one peer to another peer. However, Skype protocols are different and the appropriate signatures have been created and configured into the DPI devices to allow for 100% recognition of Skype traffic such that Skype traffic is not being shaped. Also, only certain traffic is targeted for shaping. The DPI shaping rules deployed by Bell Canada are set for P2P file sharing signatures. VoIP voice communications are "UDP" based and not TCP based and so VoIP communications are not impacted by the current shaping rules. To be clear, Skype and all other forms of VoIP traffic are not being traffic shaped by Bell Canada. As for VPN and streaming, there are specific signature sets for these applications as well that the DPI can recognize. Streaming over HTTP is obviously captured under the HTTP signature since its transfer is specifically on top of HTTP. VPN traffic, on the other hand, is typically encrypted. Therefore, the VPN signatures in the DPI are created leveraging the standard Internet ports. As long as the customer's port setup is correct, VPN traffic will not be shaped. It is noteworthy that most VPN client setups do use the correct standard Internet port.

36. Skype appreciates the sensitivity that this statement demonstrates with regard to the susceptibility of DPI equipment to negatively affect a Skype experience. However, in its response to interrogatory CAIP (CRTC) 15May08-2, CAIP contends that user complaints, tests undertaken by CAIP members and submissions by other interested parties indicate that "a vast array of on-line content, services and applications, including VPN, VoIP, P2P content, on-line games, open source software and practically any form of encrypted content, have been dramatically and negatively affected by Bell's traffic

shaping practices”. Thus the question of whether DPI equipment is being employed – either intentionally or unintentionally – to affect a consumer’s ability to utilize the application of their choice is not without doubt.

37. In fact, the record of the proceeding suggests that at least some Internet applications and service providers have been negatively affected by Bell Canada’s traffic shaping practices. Those negative effects may constitute unjust discrimination or an undue or unreasonable disadvantage contrary to subsection 27(2) of the *Telecommunications Act*. The burden of proof under subsection 27(4) of the Act is on the Canadian carrier to establish that any discrimination is not unjust or that any disadvantage is not undue or unreasonable. The Commission has also set out requirements for the continued implementation of a competitive telecommunications marketplace, including network changes requiring prior notification.⁹ In meeting the burden of proof under subsection 27(4), and in meeting the Commission’s network change notification requirements, prior consultation with Internet service providers that rely on Bell Canada’s access services could have been expected. The record of the proceeding indicates that Bell Canada implemented its traffic shaping practices without prior consultation with its wholesale customers. Skype notes particularly the submissions made in paragraphs 39, 40, 49 and 50 of CAIP’s Reply.

V. CONCLUDING COMMENTS

38. In sum, Skype appreciates the CRTC’s attention to the important issues raised by this proceeding. Skype respectfully requests that resolution of the instant proceeding should be guided by three core ideas: balance, proportionality and consumer empowerment. If the CRTC authorizes some level of traffic shaping, it should ensure that traffic shaping responses are proportional and are the least restrictive means to address a particular congestion issue. In particular, the CRTC should declare application-specific throttling techniques, such as outright bans on P2P traffic, presumptively unreasonable. In the end,

⁹ Telecom Letter Decision 1994-11, 4 November 1994, *Re: Notification of Network Changes, Terminal-to-Network Interface Disclosure Requirements and Procedures for the Negotiation and Filing of Service Arrangements*, which includes the statement: “The Commission considers that all changes that affect a competitor’s use or potential use of bottleneck functions should require notification, and that such changes would include technical changes to interconnection interfaces, as well as changes to local network functions (including new functions) that could be used to provide competitive services.”

the CRTC should satisfy itself that whatever balance is struck in this investigation, consumers have more choice for their Internet access service and the widest variety of Internet applications, including Skype.