

**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**

**ANSWER
TO REQUEST FOR INTERIM RELIEF**

BELL CANADA

15 APRIL 2008

Table of Contents

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 CAIP'S APPLICATION AND REQUEST FOR INTERIM RELIEF	1
3.0 OVERVIEW OF BELL CANADA'S POSITION	1
4.0 FACTUAL ERRORS AND UNSUBSTANTIATED ALLEGATIONS IN CAIP'S APPLICATION.....	4
4.1 Growth in Internet bandwidth use and increasing network congestion	4
4.2 What is peer-to-peer (P2P)?	4
4.3 What is Deep Packet Inspection (DPI)?.....	5
4.4 What is Bell Canada actually doing to manage its network?.....	5
4.5 Results of Bell's Internet traffic management solution	7
4.6 Allegations of problems caused by DPI	8
4.7 Fact vs. Fiction.....	9
5.0 CAIP'S REQUEST FOR AN INTERIM ORDER ON AN URGENT AND EXPEDITED BASIS.....	10
6.0 CONCLUSION.....	20

1.0 INTRODUCTION

1. Bell Canada (Bell or the Company) is in receipt of an Application (the Application), dated 3 April 2008, made by the Canadian Association of Internet Providers (CAIP) pursuant to sections 7, 24, 25, 27, 32, 36 and 62 of the *Telecommunications Act* (the *Act*) and Part VII of the *CRTC Telecommunications Rules of Procedure* (the *Rules*) requesting that the Commission issue certain orders directing Bell Canada to cease and desist from "throttling" wholesale ADSL services and in particular, the wholesale service known as Gateway Access Service (GAS). As part of its Application, CAIP also made a request for interim relief on an expedited basis requesting that the Commission issue an order directing Bell Canada to immediately cease and desist from "throttling" GAS. In a letter dated 8 April 2008, the Commission directed Bell Canada to file its answer with respect to CAIP's request for interim relief on 15 April 2008 and that CAIP file its reply on 21 April 2008.

2.0 CAIP'S APPLICATION AND REQUEST FOR INTERIM RELIEF

2. In its Application and request for interim relief, among other things, CAIP alleges that the Company's "traffic shaping measures" have "impaired the speed and performance of the wholesale ADSL access services ... beyond recognition", have "dramatically reduced the volume of traffic that independent ISPs are able to deliver to Internet backbone providers" and have "caused harm to independent ISPs in the form of threatened and actual cancellation of services contracts".

3. Furthermore, in its Application at paragraph 1, CAIP states that its application is made on behalf of "those of CAIP's members that provide retail internet access services". However, the Company notes that some of its GAS customers have told the Company that they support its Internet traffic management solution and further, some of them have noted that they have adopted similar traffic management practices.

3.0 OVERVIEW OF BELL CANADA'S POSITION

4. To begin, there is no question that increasing traffic generally, and peer-to-peer (P2P) file sharing traffic and video streaming content such as YouTube, is affecting the networks of Internet carriers across North America – as noted below, even BitTorrent has acknowledged that congestion is a problem. However, in order to continue to ensure a consistently high level of service for all of its customers, whether retail or wholesale customers, Bell Canada is required to manage its network in such a way that no customer, service or application

consumes excessive bandwidth that may impede the use and enjoyment by other customers. As such, Bell has deployed its network management solution to P2P file sharing traffic.

5. This type of network management employed by Bell during peak periods (and described below) allows Bell Canada to deliver a more consistent and reliable experience to all its customers who use real-time sensitive applications like browsing, instant messaging and streaming. All online applications continue to be available to all customers. All customers can continue to use P2P applications at any time. However, they will simply not work as fast for some users during peak usage periods in order to ensure optimized service for all of our customers.

6. Before addressing the Commission's test for interim relief (known as the *RJR MacDonald* test), it is important to clarify the facts. Rather than providing evidence of harm related to its Internet traffic management solution, CAIP's Application is limited to unsubstantiated allegations and observations. When one looks at all the facts, however, the Company can confirm that:

- it is only applying its Internet traffic management solution to P2P file sharing applications during peak Internet usage periods;
- it is not applying its Internet traffic management solution to streaming applications such as YouTube or Internet radio;
- it has not been presented with any evidence that its Internet traffic management solution is having any impact on VPN or VoIP traffic;
- it is applying its Internet traffic management solution to its Sympatico retail and business customer base and to its wholesale DSL customer base who share a common network in the exact same manner and to the same extent;
- it is not applying its Internet traffic management solution to wholesale HSA traffic;
- it has not introduced its Internet traffic management solution to stem the tide of Sympatico customers to its wholesale competitors in the face of ongoing changes to Sympatico Internet access rate plans;
- it remains willing to work with any customer who is experiencing Internet service problems and in particular those believed to be caused by its Internet traffic management solution; and
- it has contacted its ISP customers and encouraged them to come forward with any suspected problems and remains committed to working with them.

7. Furthermore, the Company notes that the regulatory framework has already provided numerous competitive choices in the market. Internet service providers (ISPs) have other options than purchasing access under Bell's GAS Tariff. They are free to lease unbundled local loops, to invest in co-location and Digital Subscriber Line Access Multiplexers (DSLAMs), to subscribe to wholesale Internet high speed access service from cable carriers through third party Internet access (TPIA) or to build their own networks. All of these options would avoid any traffic management activity by Bell. They can also purchase High Speed Access (HSA) which is not subject to traffic management.

8. Regarding its specific request for interim relief under the first prong of the *RJR MacDonald* test, CAIP has not demonstrated that there is a serious issue to be tried. First, the Company is not operating off-tariff. To the contrary, the Company's traffic management measures are performed in a manner consistent with its tariffs and contractual obligations. Second, the Company is not unjustly discriminating against its wholesale ISP customers nor is it granting unto itself an unjust preference as it is applying its Internet traffic management solution to retail and wholesale customers using the same network in the same manner and to the same extent. Third, the Company is not affecting end-user's privacy nor is it controlling the content of influencing the meaning or purpose of telecommunications. The Company's use of Deep Packet Inspection (DPI) as part of its Internet traffic management solution is such that it treats all P2P traffic the same, it only looks at the application header of the content but not the content itself, and it does not block access to any content or applications.

9. Further, CAIP has not met the second prong of the test regarding irreparable harm. It has adduced no evidence of harm that is clear and not speculative that is actually being suffered by its independent ISP members. Even if any of CAIP's allegations constituted harm, in those cases where financial harm is alleged, it is money that independent ISPs would have spent in any event (i.e. if the interim order is granted they will still incur these charges) and therefore cannot constitute irreparable harm.

10. As for the third prong of the test, the balance of convenience clearly supports the status quo. The Company has observed, as a result of deploying its Internet traffic management solution, a 50% reduction in total P2P traffic during peak periods and a decrease in the number of congested links. The Company has also observed that other types of traffic such as web browsing, and audio or video streaming, previously impacted by congestion at peak periods,

has quickly filled the bandwidth made available through the use of Internet traffic management therefore improving the customer online experience for such interactive and real-time activities. Granting CAIP's request would actually have the perverse effect of providing an unreasonable preference to wholesale ISP customers and their end users who will be able to continue to use a disproportionate amount of available bandwidth during peak periods creating an unreasonable disadvantage for Sympatico retail and business customers. Therefore, the Company submits that since CAIP has not met the test for the granting of such an extraordinary remedy, that the request for an interim order should be denied.

4.0 FACTUAL ERRORS AND UNSUBSTANTIATED ALLEGATIONS IN CAIP'S APPLICATION

11. There appears to be a large amount of confusion and miscomprehension about how the Internet works, what Bell Canada is actually doing to manage its network and the impact that it is having on Internet users. Customers generally, including the Applicants, are using unsubstantiated allegations as facts to then jump to certain conclusions. The Commission's assessment must be based on facts, not unsubstantiated allegations. The following is a clarification of the facts.

4.1 Growth in Internet bandwidth use and increasing network congestion

12. A more detailed description of how traffic is routed on the Internet and how the Internet handles congestion can be found in Appendix 1. The Internet is generally a shared network that uses best efforts to route traffic. However, some traffic, such as web browsing and streaming audio or video, is more time sensitive and needs to be delivered quicker than other traffic which is less time sensitive, such as peer-to-peer file transfers for later use. Given the increased levels of congestion on the Internet, the Company has, as part of its ongoing normal network management and in efforts to better manage network congestion during peak usage periods, decided to apply its current Internet traffic management solution to peer-to-peer (P2P) traffic thereby redistributing this traffic to lower usage periods.

4.2 What is peer-to-peer (P2P)?

13. The following is a brief description of peer-to-peer file sharing applications. A more detailed description can be found in Appendix 1. P2P is the name of a class of file sharing applications, including the popular BitTorrent, which may run "unattended" in order to transfer

large files in the background. Typical interactive applications such as web browsing send and receive a certain amount of data every so often, but most of the time the computer is waiting for user interaction. The unattended P2P applications, on the other hand, use as much bandwidth as they can the whole time that they are running. These P2P applications may use as many as 40 to 100 Transmission Control Protocol (TCP) sessions at the same time, while a web browser uses two to four. This difference is often increased by so-called heavy users who might choose to run P2P on 2 or more computers at the same time. So, the P2P application not only uses considerably more traffic volume in the long run because it runs for a lengthy amount of time, it also uses up a disproportionate share of the available bandwidth at any given point in time because it uses so many concurrent TCP sessions. Therefore, hundreds of TCP sessions generated by a single user will negatively impact the experience of many others.

4.3 What is Deep Packet Inspection (DPI)?

14. The following is a brief description of DPI. A more detailed description can be found in Appendix 1. Bell's Internet traffic management solution uses network equipment that can perform DPI. DPI is used to examine each of the protocol headers that wrap the content in order to identify the type of application package being transmitted. This allows Bell to balance the delivery of different types of applications over a network similar to how a postal service needs to balance the delivery of time sensitive overnight packages and high volume bulk mail shipments. The postal delivery system uses identifiers on packages to identify different types of package content to balance the flow of time sensitive overnight packages with that of bulk mail shipments. In a similar way, DPI technology uses the communication protocol headers to identify the traffic type in order to balance the flow of web, video and other time sensitive traffic with that of delivery of high volume P2P traffic across a network at peak times. The actual content of the packet is not examined, just the protocol headers encapsulating the content. With the application identified, DPI can now balance the application traffic flows to manage the delivery of the real time traffic that can affect the user's experience the most while still delivering all network traffic.

4.4 What is Bell Canada actually doing to manage its network?

15. After a period of technical trials, Bell Canada began the deployment of its current Internet traffic management solution to its Sympatico retail customer base on 28 October 2007 during peak periods of Internet usage that typically occur in the early evenings and end in the

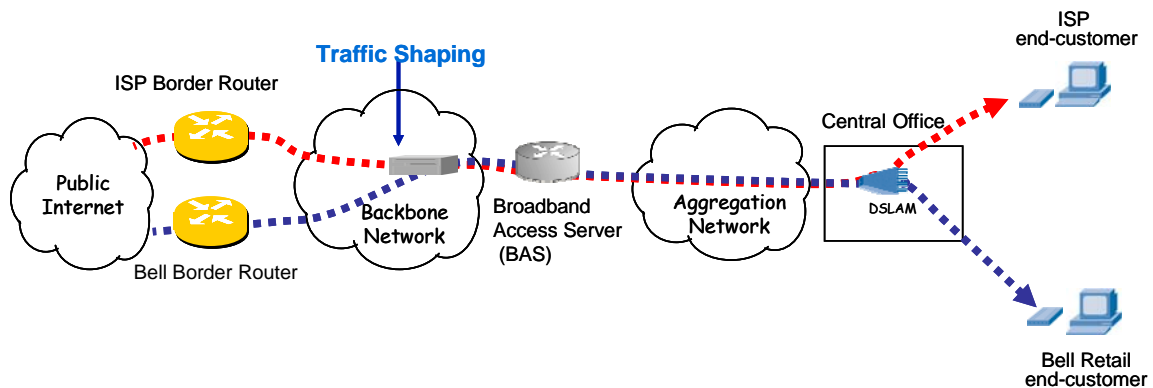
early mornings (i.e. 4:30 p.m. to 2:00 a.m.). While the Company will continue to ensure that its solution reflects the impact of network utilization and evolving traffic patterns, the current upload/download rate speeds for P2P usage are gradually decreased at the beginning of the peak period and then gradually increased towards the end of the peak period. After additional software upgrades and trials, Bell Canada began the second phase and applied its current Internet traffic management solution to its wholesale Digital Subscriber Line (DSL) customer base on 14 March 2008. As of 10 April 2008, the Company has applied its current Internet traffic management solution to wholesale to the same extent as retail. The Company has reached substantial deployment of aggregation sites in its network which handle the vast majority of wholesale and retail traffic, with the remaining deployment to take place over the coming months.

16. Bell's Internet traffic management solution is intended as a mechanism to allow for a better allocation of bandwidth for all users that share a common network and is aimed at delivering a more positive and better experience on the network for all users during peak Internet usage periods. Bell Canada has restricted the application of its Internet traffic management solution to only P2P file sharing applications, including BitTorrent, which uses a well understood Internet protocol that is distinct from other types of Internet traffic such as Voice over Internet Protocol (VoIP). The Company's Internet traffic management solution is being applied in the same manner to all P2P traffic on its DSL Point to Point Protocol over Ethernet (PPPoE) network, including both retail and wholesale services such as GAS.

17. The Company's GAS Tariff provides a broadband access service based on asynchronous digital subscriber line (ADSL) technology and enables a service provider to establish a high speed data access path between its end-user's premises and a Company serving wire centre. GAS uses available bandwidth above the voice-band on the same local loop as the end-user's Company or CLEC provided residential or business individual line. It includes logical paths to provide network connectivity between GAS Access arrangements and an ADSL Aggregated High Speed Service Provider Interface (AHSSPI) by aggregating traffic associated with each GAS Access served from groups of wire centres to a broadband access server (BAS) and subsequently aggregating such traffic from all Company provided BAS to the ADSL AHSSPI. Essentially, it also includes the backbone to transit traffic from the central office where the end-user is located to the nearest central office for the ISP's point-of-presence.

18. The Company's HSA Tariff is based on the same ADSL technology and enables a service provider to establish a high speed data access path between its end-user's premises and a Company serving wire centre. HSA also uses available bandwidth above the voice-band on the same local loop as the end-user's Company or CLEC provided residential or business individual line. However, HSA includes a dedicated Permanent Virtual Circuit (PVC) between the end-user's premises and the AHSSPI located in the Company's wire centre and is not aggregated via a Broadband Access Server (BAS). This dedicated channel can be used by the ISP to deliver features that require a permanent IP address, such as monitoring. This level of dedication is clearly reflected in the price of the service. Given this difference, HSA traffic is not subject to the Company's Internet traffic management solution.

19. In Bell Canada's network, a DPI device is located behind the BAS where retail and wholesale traffic is aggregated from multiple central offices. All traffic transiting through the BAS is subject to the Internet traffic management solution. HSA traffic does not transit through the BAS. As the following diagram clearly shows, GAS and retail traffic transit through the same path/equipment from an end-user up to and including the location where the Internet traffic management solution is applied. The Company's Internet network management solution applies to both uploads and downloads of P2P traffic during peak periods.



4.5 Results of Bell's Internet traffic management solution

20. Last fall, before the Company began deployment of its Internet traffic management solution to ease network congestion during peak usage periods, 5% of users were generating 60% of total traffic on the network and 60% of that traffic was P2P traffic, including BitTorrent. During peak periods, that same 5% of users were utilizing 33% of available bandwidth. In other

words, 95% of Bell subscribers were being negatively impacted by a very small minority of Internet users primarily using P2P file sharing applications.

21. As a result of the application of its Internet traffic management solution, the Company has observed a 50% reduction in total P2P traffic during peak periods and a decrease in the number of congested links. The Company has also observed that other types of traffic such as web browsing, and audio or video streaming, previously impacted by congestion at peak periods, has quickly filled the bandwidth made available through the use of Internet traffic management therefore improving the customer online experience for such interactive and real-time activities.

4.6 Allegations of problems caused by DPI

22. There have been several reports on various websites and in online forums, as well as allegations in CAIP's Application (see in particular paragraph 103), that the Company's Internet traffic management solution is affecting more than P2P applications, such as VoIP and Virtual Private Network (VPN) traffic, as well as online streaming traffic such as YouTube and Internet radio. The Company has investigated several of these reports and in each case has shown that traffic shaping was not the cause of the reported problem. Ongoing daily traffic reports and internal testing continue to confirm that VPN, VoIP and online streaming traffic such as YouTube and Internet radio are not being shaped or affected by the Company's solution. In fact, the Company has observed that usage of these streaming applications tends to spike during peak periods when the Internet traffic management solution is applied to P2P traffic as compared to levels that were being reached before implementation.

23. In working with wholesale customers and their end users to troubleshoot their reported problems, the Company has thus far been able to confirm that network management has not been the cause of any of the reported problems. Some of the reported problems were actually due to various unrelated factors, such as a slow third party server, clients modified from normal configurations, reported problem occurring outside traffic management hours, internal wiring issues, and a recent third party software patch with default settings.

24. Regarding allegations about "drastic reductions in transfer speeds" of CAIP's ISP members, the opposite is the case. Depending on the traffic mix, the Company has only observed a small drop in peak throughput as other types of traffic such as web browsing and

audio or video streaming, previously impacted by congestion at peak periods, quickly filled the bandwidth made available through the use of Internet traffic management and therefore improved the customer online experience for such interactive and real-time activities.

25. While some wholesale ISP customers have been willing to troubleshoot their reported problems with the Company, unfortunately, there are a handful who to date remain unwilling to even discuss their alleged reported problem. Nevertheless, Bell Canada continues to encourage its wholesale ISP customers to bring to the Company's attention any reports that our Internet traffic management solution may be affecting more than P2P applications or negatively affecting traffic volumes and remains committed to working with them to resolve any potential problems (see Appendix 2 - *DSL Traffic Management - Frequently Asked Questions (FAQ)* that was recently shared with wholesale ISP customers).

4.7 Fact vs. Fiction

26. Notwithstanding the alleged reports referred to above and the unsubstantiated "observations" contained in the CAIP Application, the Company can confirm that:

- it is only applying its Internet traffic management solution to P2P file sharing applications during peak Internet usage periods;
- it is not applying its Internet traffic management solution to streaming applications such as YouTube or Internet radio;
- it has not been presented with any evidence that its Internet traffic management solution is having any impact on VPN or VoIP traffic;
- it is applying its Internet traffic management solution to its Sympatico retail and business customer base and to its wholesale DSL customer base who share a common network in the exact same manner and to the same extent;
- it is not applying its Internet traffic management solution to wholesale HSA traffic;
- it has not introduced its Internet traffic management solution to stem the tide of Sympatico customers to its wholesale competitors in the face of ongoing changes to Sympatico Internet access rate plans;
- it remains willing to work with any customer who is experiencing Internet service problems and in particular those believed to be caused by its Internet traffic management solution; and

- it has contacted its ISP customers and encouraged them to come forward with any suspected problems and remains committed to working with them.

5.0 CAIP'S REQUEST FOR AN INTERIM ORDER ON AN URGENT AND EXPEDITED BASIS

27. Among the numerous orders sought in the Application, CAIP has requested that the Commission issue the following interim orders "on an urgent and expedited basis":

- a) "...directing Bell Canada to immediately cease and desist from using any technologies to "shape", "throttle" and/or "choke" its wholesale ADSL services;
- b) ... an order abridging the timeframes for the respondent to file its Answer to within four (4) business days of this Application and for the Application, CAIP, to file its Reply to within three (3) business days of Bell's Answer;"

28. Before granting a party interim relief under section 61(2) of the *Act*, the Commission has required the party requesting the relief to demonstrate that it meets the criteria for interim relief set out by the Supreme Court of Canada in *Manitoba (Attorney General) v. Metropolitan Stores (MTS) Ltd.* [1987] 1 S.C.R. 110, as modified by the Court's decision in *RJR-MacDonald Inc. v. Canada (Attorney General)* [1994] 1 S.C.R. 311. Known as the *RJR-MacDonald* criteria, these criteria are that:

- a) there is a serious issue to be determined;
- b) the party seeking relief will suffer irreparable harm if the interim relief is not granted; and
- c) the balance of convenience, taking into account the public interest, favours retaining the status quo until the Commission has disposed of the issues.

29. In Telecom Decision CRTC 2002-38, *Part VII Application by Bell Mobility Inc., Microcell Telecommunications Inc., Rogers Wireless Inc. and TELUS Mobility - Disconnection of wireless facilities at Lester B. Pearson International Airport*, the Commission stated that "[a]n applicant for interim relief is required to establish that it has met all three of the *RJR-MacDonald* criteria." [emphasis added] Each of these three branches of the test is considered in the following paragraphs.

30. It is well accepted that the granting of interim relief is an "extraordinary" remedy and should be granted only in those circumstances which warrant taking such a drastic and extraordinary step (see *Kanda Tsushin Kogyo v. Covely* [1997] O.J. No. 56 at para. 3-4; *Airport Limousine Drivers Assn. v. Greater Toronto Airports Authority* [2005] O.J. No. 3509 at para. 85). In this case, CAIP has limited its justification for its request for such relief to vague allegations with no facts or evidence to support them.

i) Is there a serious issue to be tried?

31. Turning to the first of the three *RJR-MacDonald* criteria, namely the requirement that the Application raise a serious issue to be determined, the Company recognizes that the Supreme Court decided that the evidentiary threshold required to meet this test was a low one; that an application should only be denied under this first prong of the test if it is considered vexatious or frivolous. The Company submits that CAIP's Application fails to satisfy even such a low evidentiary threshold. CAIP has offered essentially three grounds upon which the Commission should grant its request. These three grounds are that:

- i) Bell Canada is operating off tariff contrary to sections 24 and 25;
- ii) Bell Canada's actions constitute an undue and unreasonable preference granted upon itself and a disadvantage applied to independent ISPs; and
- iii) Bell Canada's actions violate the privacy of communications of its wholesale customers and their end-users and is controlling or influencing the content of telecommunications contrary to sections 7(i) and 36 of the *Act*.

The Company is not operating off tariff contrary to sections 24 and 25:

32. The GAS Tariff specifies the "maximum" downstream and upstream speeds that are available under the tariff. They are just that - maximum speeds - and the GAS Tariff clearly states that the speeds are "up to". Similar to its Sympatico service, the GAS Tariff does not guarantee the maximum speeds at all times. The Company offers its DSL service on a best efforts basis and cannot guarantee that it will have sufficient bandwidth or capacity available through the entire shared network. For those who want dedicated and more consistent speeds, they can purchase HSA. Furthermore, while the average usage per end user has increased substantially over the last three years since the GAS Tariff was approved, as of yet the Company has not filed for rate increases in spite of increases in the rate in the retail market in Ontario nor introduced bandwidth caps or usage billing to reflect similar movement in the retail

market. (However, the Company does note an outstanding GAS Service Charge restructure filed on 9 November 2007, under Bell Canada Tariff Notice No. 7081, resulting in rate reductions in the charges associated with service activation and also included an increase in speeds with no change in monthly rates.)

33. All Company tariffs, including the GAS Tariff, are subject to all applicable tariffs, including General Tariff – 6716, Part 1, Item 10 (Terms of Service). Section 8.3 of the Company's General Terms of Service states that:

"Customers are prohibited from using Bell Canada's services or permitting them to be used so as to prevent a fair and proportionate use by others. For this purpose, Bell Canada may limit use of its services as necessary."

34. This fact is clearly stated in the Company's Master Communications Agreement for Tariffed (MCAT) services that each ISP purchasing GAS must execute. Furthermore, agreements with the Company's wholesale GAS customers typically include as an appendix Internet Use Policies that clearly provide that the customer agrees to comply with the Policies and to ensure that its end users comply with the Policies. Specifically, the Policies provide that the service may not be used "in a manner which is contrary to law or would serve to restrict or inhibit any other user from using or enjoying the service or the Internet."

35. The Commission has recognized that the Company's Terms of Service contain provisions that allow it to suspend or terminate service where a customer uses or permits others to use services so as to prevent fair and proportionate use by others. Given the existence of the Terms of Service, the Commission has stated that it is not necessary to include "network congestion" provisions in a specific Company tariff (see Telecom Decision CRTC 94-10; Telecom Order CRTC 94-1073). The Commission has extended this ability to cable carriers allowing them the right to suspend or terminate the service of an ISP's end-user who makes disproportionate use of the service (see Telecom Order CRTC 2000-789).

36. The Commission has also found that the making of a very large volume of calls in a short timeframe was taking up lines that were not available for other customers thereby preventing them from making fair and proportionate use of such lines (see Telecom Order CRTC 2003-378).

37. The Commission also took the preliminary view in Telecom Order CRTC 2000-789 that the attachment by an end-user of a server at its premises would not be "fair and proportionate use" of the cable carrier's access services. The purpose of a server is to serve content. In fact, P2P file sharing applications do behave like servers as they support the forwarding of content to other P2P users while receiving content. P2P file sharing applications actually allow external clients to connect via multiple sessions and download content, thus acting like a server.

38. Nevertheless, the Company has not fully exercised its discretion to "suspend or terminate" service of those wholesale ISP customers whose end users prevent a fair and proportionate use by others. Instead, the Company has made use of other technical options available, such as its Internet traffic management solution, that simply limit use of its service as necessary to ensure a fair and proportionate use by all its customers. In short, contrary to CAIP's allegations, the Company's traffic management measures are performed in a manner consistent with its tariffs and contractual obligations.

No unjust discrimination, undue or unreasonable preference, or undue or unreasonable disadvantage under s. 27(2):

39. As the Company has explained above, its Internet traffic management solution was first deployed to its Sympatico retail customer base and only recently did it begin the second phase with application to its wholesale DSL GAS customers who share the same network. Therefore, there has not been any discrimination, preference or disadvantage as between the Company and its wholesale GAS customers, let alone any unjust discrimination, undue or unreasonable preference or undue or unreasonable disadvantage.

40. Furthermore, while the Company, similar to any network provider, requires the flexibility to apply necessary traffic management solutions depending on the circumstances, the Company's current Internet traffic management solution is applied only during peak usage periods to alleviate network congestion and is only applied to P2P file sharing applications to better manage the bandwidth made available for their use. All P2P file sharing applications can still be used, but they will simply be slower for some users when traffic management is applied so as to redistribute P2P traffic from peak periods to off-peak periods. However, even though all P2P traffic is subject to the same rates during peak periods, those users with low to moderate usage of P2P during peak periods will simply not experience the same delay in their level of use.

Not affecting end-user's privacy nor controlling the content or influencing the meaning or purpose of telecommunications under s. 36:

41. As noted above, the Company's use of DPI as part of its Internet traffic management solution is such that it treats all P2P traffic the same and it only looks at the application header of the content but not the content itself. As part of its traffic management solution, the Company does not block access to any content or applications. Therefore, the Company is not affecting end-user's privacy nor is it controlling the content or influencing the meaning or purpose of telecommunications. As explained in more detail in Appendix 1, the DPI equipment used by Bell does not retain the information that it has reviewed from the packet headers and the content itself is not actually reviewed, analyzed or stored. Furthermore, it is also common knowledge that other Canadian ISPs also use similar technologies in their networks to manage traffic.

ii) Will the Applicant suffer irreparable harm if the interim relief is not granted?

42. The second of the three *RJR-MacDonald* tests requires a consideration of whether the Commission's refusal to grant relief could "so adversely affect the applicant's own interests that the harm could not be remedied if the eventual decision on the merits does not accord with the results of the interlocutory application" (emphasis added). Where harm (if any) can be quantified in monetary terms, it is not irreparable. In addition, harm, to count under this prong, needs to be suffered by the applicant, not by third parties. Finally, while it is true that irreparable harm refers to the nature of the harm as distinct from its magnitude, the evidence as to irreparable harm "must be clear and not speculative" (see *Ipsos Reid S.A. v. Reid* [2005] B.C.J. No. 1674 at para. 84).

43. At paragraph 104 of its Application, CAIP outlines four elements of harm that independent ISPs have suffered as a result of the Company's "traffic shaping measures":

- i) "Caused marked difficulty or rendered impossible for independent ISPs to properly manage the services that they provide to their end-customers;
- ii) Dramatically reduced the volume of traffic that independent ISPs are able to deliver to Internet backbone providers. Consequently, they are paying for transit that they are not actually able to use;

- iii) Forced ISPs to pay for GAS service components even though Bell is not delivering traffic at the volumes necessary to justify the cost or the need for these service components;
- iv) Caused harm to independent ISPs in the form of threatened and actual cancellation of service contracts."

44. While the Company denies that independent ISPs have suffered any such harm as a result of its traffic management solution, the Company submits that even if they did suffer any such harm, that it does not amount to irreparable harm under the second test. Furthermore, CAIP has not provided any facts or supporting evidence whatsoever to prove any of the alleged harm, let alone that the harm is irreparable, having limited its statements to "observations" and its "knowledge". Not only is CAIP's evidence (to the extent there is any) not clear, it is completely speculative.

- i) Caused marked difficulty or rendered impossible for independent ISPs to properly manage the services that they provide to their end-customers.

45. In the CAIP Application, this ground is presented in a one line allegation and surely cannot constitute "clear" evidence of irreparable harm. Further, Bell notes that ISPs have other options than purchasing access under Bell's GAS Tariff. They are free to lease unbundled local loops (or lease only the upper bandwidth portion of a loop through line sharing) and invest in co-location and their own DSLAMs. A number of ISPs have already done just that. If they do make these investments, ISPs have complete control of their backbone network and their traffic will not be managed by Bell Canada. In addition to unbundled loops and line sharing, ISPs can subscribe to wholesale high speed Internet access service from cable carriers through TPIA or can build their own access networks. All of these options would avoid any traffic management by Bell. They can also purchase HSA from Bell Canada which is not subject to traffic management. Given these options, the Commission found in Decision 2008-17 that GAS service was not an essential service.

46. But for many ISPs, GAS is the cheapest and thus the most economical solution. It is the most economical solution because it is designed to take advantage of the Bell retail network infrastructure (in contrast to the more expensive HSA service) by co-mingling its traffic with that of the Bell retail network. For this reason, ISPs cannot expect their traffic to be subject to preferential treatment on the shared network.

- ii) Dramatically reduced the volume of traffic that independent ISPs are able to deliver to Internet backbone providers. Consequently, they are paying for transit that they are not actually able to use.

47. Regarding CAIP's allegation of "dramatically reduced" volumes of traffic, since traffic volumes are indeed measurable, then it is incumbent upon CAIP to adduce such evidence when seeking such extraordinary relief. It has not done so. Furthermore, the Company has seen in the online forums a similar allegation of dramatically reduced volumes and can confirm that such is not the case and that indeed there was only a minor/small decrease in traffic.

48. Even if true, this is money that independent ISPs would have spent in any event (i.e. if the interim order is granted they will still incur these charges) and therefore cannot constitute irreparable harm.

- iii) Forced ISPs to pay for GAS service components even though Bell is not delivering traffic at the volumes necessary to justify the cost or the need for these service components;

49. As explained above, the GAS tariff requires that a wholesale ISP customer pay on a per user basis – full stop. There are no other "GAS service components". The "GAS service components" that CAIP refers to actually relate to bandwidth and the components needed by independent ISPs between the Company's central office and the ISP's location. These service components have nothing to do with the GAS Tariff. See ii) above for our comments regarding the allegation related to "volumes" of traffic.

50. Even if true, this is money that independent ISPs would have spent in any event (i.e. if the interim order is granted they will still incur these charges) and therefore cannot constitute irreparable harm.

- iv) Caused harm to independent ISPs in the form of threatened and actual cancellation of service contracts.

51. To begin, CAIP has not produced any evidence of actual lost customers. In paragraph 106 of its Application, CAIP also claims that independent ISPs will suffer harm in the form of loss of good will and permanent market share loss, over and above lost revenues. CAIP also

claims that the Company's "traffic shaping measures ... directly curtails the ability of independent ISPs to compete in retail Internet access market."

52. While the Company has received emails and viewed online forum postings in which commenters have said they will no longer deal with Bell Canada, there are virtually no known instances of ISP customers suggesting they will leave their ISP. However, there are numerous postings suggesting increased loyalty to their ISP. Furthermore, it is unclear where their alleged "lost" customers have gone given other network providers manage their networks similar to Bell or already have introduced caps or usage billing. There is therefore no proof that they will not be able to recover any lost revenues.

53. CAIP alleges that Bell intentionally and for anti-competitive reasons deployed its Internet traffic management solution on its wholesale customer base at the same time as it introduced retail Sympatico service changes. This allegation is simply false. The Company has had usage based retail plans since 2002 when its Lite and Basic Lite services were first launched. Since then, the Company has continued making changes to its retail Sympatico plans such as when it introduced various usage thresholds in April 2006 or when it stopped offering unlimited usage rate plans in August 2007 up to the "stop-sell" of unlimited usage add-on plans effective 12 March 2008. The existence of usage based billing on the retail side has not affected the Company's ongoing need to continue to manage its network during peak periods for the benefit of all customers regardless of rate plan.

54. Finally, in paragraph 107 of its Application, CAIP also claims "that damage to the public interest in the orderly development of telecommunications and the privacy and inviolability of telecommunications carried by Bell, ... cannot be compensated in damages". As stated above, not only is this not harm suffered by the Applicants which is a requirement for the second test, but the courts have clearly stated that when considering the second test of determining "irreparable harm", that any alleged harm to any one else other than the Applicant, including consideration of the public interest, should be considered as part of the third test under balance of convenience (see *RJR MacDonald* at p. 405).

Does the balance of convenience, taking into account the public interest, favour retaining the status quo until the Commission has disposed of the issues?

55. The final branch of the *RJR MacDonald* criteria requires the Applicant to satisfy the Commission that the balance of convenience, taking into account the public interest and any other special factors, favours granting the interim order requested.

56. There is no question that increasing traffic generally, and P2P file sharing traffic and video streaming content such as YouTube, is affecting the networks of Internet carriers across North America – even BitTorrent has acknowledged that service providers have to manage their networks somehow, especially during peak times:

"While we think there were other management techniques that could have been deployed, we understand why Comcast and other ISPs adopted the approach that they did initially," Eric Klinker, BitTorrent's chief technology officer, said in a statement (see BitTorrent press release, *Comcast and BitTorrent form Collaboration to Address Network Management, Network Architecture and Content Distribution*, dated 27 March 2008; see also letter from Comcast to the FCC Chairman dated 28 March 2008).

57. In order to continue to ensure a consistently high level of service for all of its customers, whether retail or wholesale customers, Bell Canada is required to manage its network in such a way that no customer, service or application consumes excessive bandwidth that may impede the use and enjoyment by other customers. This type of network management during peak periods allows Bell Canada to deliver a more consistent and reliable experience to all its customers who use real-time sensitive applications like browsing, instant messaging and streaming. All online applications continue to be available to all customers. All customers can continue to use P2P applications at any time. However, they will simply not work as fast for some users during peak Internet usage periods in order to ensure optimized service for all of our customers.

58. As noted above, the Company has observed, as a result of deploying its Internet traffic management solution, a 50% reduction in total P2P traffic during peak periods and a decrease in the number of congested links. The Company has also observed that other types of traffic such as web browsing, and audio or video streaming, previously impacted by congestion at peak periods, has quickly filled the bandwidth made available through the use of Internet traffic management therefore improving the customer online experience for such interactive and real-time activities.

59. Other providers in Canada and in the U.S. have implemented similar types of measures (see Comments of Comcast Corporation filed with the FCC on 12 February 2008 *In the Matter of Broadband Industry Practices* pp. 19-24). Even though Comcast in the U.S. has said they will stop shaping P2P and BitTorrent around year end when they will move to protocol agnostic shaping, they remain committed to managing bandwidth during congestion (see Comcast news release dated 27 March 2008; see also letter from Comcast to the FCC Chairman dated 28 March 2008).

60. While it is not appropriate to consider the harm that might be suffered by the Company and its customers should the interim relief be granted at the second stage of the *RJR MacDonald* test, it is appropriate to consider it at this stage when considering the balance of convenience (see *RJR MacDonald* at p. 405).

61. Granting CAIP's request would actually have the perverse effect of providing an unreasonable preference to wholesale ISP customers and their end users who will be able to continue to use a disproportionate amount of available bandwidth during peak periods creating an unreasonable disadvantage for Sympatico retail and business customers. Furthermore, it would not be in the public interest to allow the end users of wholesale ISP customers to continue to use the freed up bandwidth resulting from the deployment of the Company's traffic management DPI solution to its retail and business customer base.

62. It is the Company's view that the balance of convenience, taking into account the public interest, favours retaining the status quo until the Commission has disposed of the issues in CAIP's Application.

6.0 CONCLUSION

63. For all of the reasons discussed above, Bell Canada submits that CAIP's request for an interim order should be dismissed in its entirety.

64. All of which is respectfully submitted on behalf of Bell Canada this 15 day April 2008.

How is traffic routed on the Internet?

Internet applications, such as email and web browsers, are used to communicate and share content over the Internet, typically between two end points. These network applications typically conform to a set of standards commonly known as the Transmission Control Protocol/Internet Protocol suite (TCP/IP).

The TCP protocol is designed to ensure delivery of the data unless the communication path between the two end-points has completely failed or is severely congested. TCP is also responsible for congestion detection and avoidance and thus will try to use as much bandwidth as the communication path can offer, without dropping packets. The IP protocol defines a set of identifiers or header information, such as IP addresses, that would allow the network to appropriately switch or route the data traffic (packets) to the intended recipients. Network equipment deployed in an ISP network, typically called a router, examines IP protocol header information, primarily the destination IP address, of each data packet and makes the necessary switching or routing decision to forward the data packet towards the receiver. These routers are also designed to efficiently route the traffic, handling failures by re-routing around parts of the network that have experienced communication failures.

In addition to the TCP and IP protocols, each Internet application supports its own application specific protocols. For example, email applications will conform to specific protocols that describe how email should be delivered or formatted. Web browsers and web servers will conform to specific protocols that describe how web pages should be transferred and displayed. Peer-to-peer (P2P) file sharing protocols (such as BitTorrent) will specify all the necessary file transferring characteristics of each file transfer. These application specific protocols are described via a set of protocol headers that are typically transferred at the initial setup phase of the communication between the two end-points. To use the postal analogy, these protocol headers are the digital equivalents to the address label, content declaration and postage on a package handled by the postal system.

To exchange content, the sender application will first exchange a set of "setup" messages or "protocol headers" with the receiver before the actual content will be exchanged. In the case of P2P file sharing, there also will be a set of messages exchanged before the content is shared.

How does the Internet handle congestion?

Essentially, congestion occurs when the network receives more traffic from its users than it can transport to its destination. Internet routers deal with congestion by simply removing or dropping excess packets that it cannot deliver. Lost packets, therefore, are an indication of congestion. TCP therefore has congestion control algorithms that make sure packets are not sent too fast or too quickly, and that it slows down when it thinks there is congestion. All properly configured TCP applications incorporate the use of the congestion detection and avoidance algorithm known as TCP Windowing.

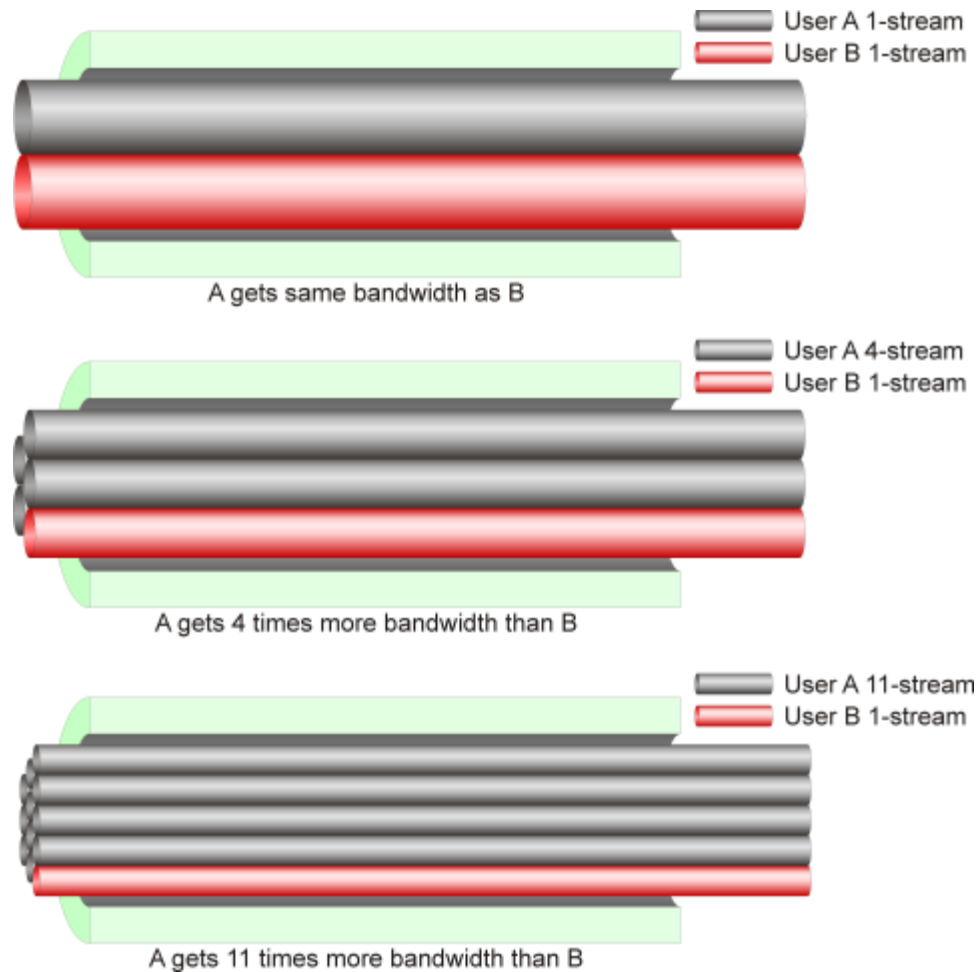
The goal of TCP is to maximize throughput. Each individual TCP session will try to use as much bandwidth as the communication path can offer without dropping packets. When TCP detects congestion it will scale back the transmission rate. Since each individual TCP session behaves and uses the same scale-back algorithm, each session will get a fair share of the bandwidth. This seems fair for applications that behave the same way on the network. But what happens when applications behave differently, such as P2P?

What is peer-to-peer (P2P) and how does it work?

Peer-to-peer networking does not have the notion of client and server nodes (computers), but only equal peer nodes that simultaneously function as both "clients" and "servers" to the other nodes on the network. P2P applications create numerous sessions to transfer pieces of the data from multiple end nodes, reassembling it upon successful receipt of all the pieces. The emergence of applications using Peer-to-peer networking across the Internet by consumers has created a dramatic change in network traffic behaviour, moving from a predictable flow based on interactive "query - response" sessions serving individual applications to "always on" background P2P multi-session activity which is only bounded by the available network capacity.

There are two ways that P2P file sharing applications unfairly use bandwidth compared to other non-P2P applications. First, a P2P application, rather than opening up only one stream or session, will open up 40 to 100 TCP sessions in an effort to transfer data as fast as possible using multiple sources and can therefore grab dozens to 100s times more bandwidth than a traditional single-stream application such as email or Internet banking applications (see the diagram below). By initiating more and more P2P applications on powerful computers, the user will continue to expand the number of active streams eventually consuming all available

bandwidth. To further compound the bandwidth demand, some users will employ multiple computers on the same Internet connection.

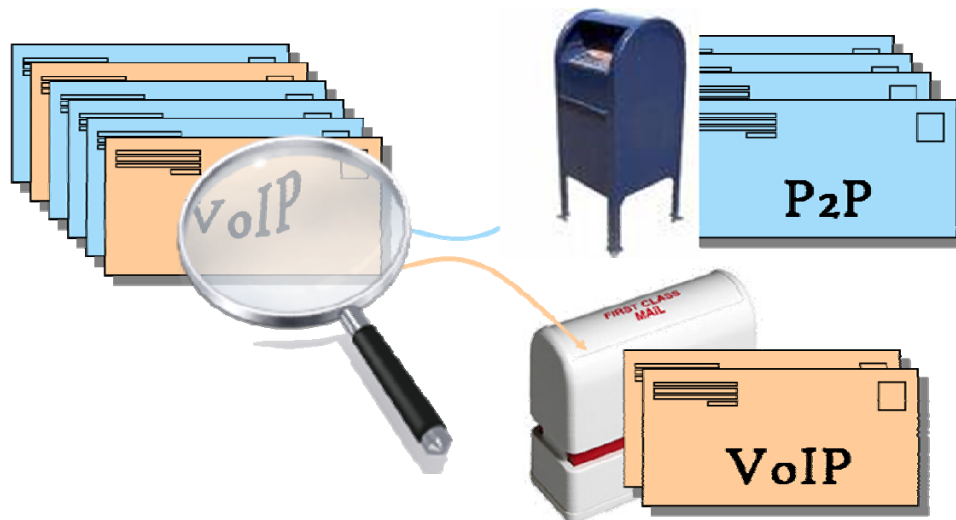


Source: *Fixing the unfairness of TCP congestion control*, George Ou posted 24 March 2008
<http://blogs.zdnet.com/Ou/?p=1078&page=1>

Second, once all the available bandwidth is being consumed, the P2P applications will use a queuing technique for additional requests until more bandwidth becomes available. The P2P application queuing of multiple requests combined with inherent application persistence of P2P enable it to sustain a continuous maximum network traffic load, 24 hours a day, 7 days a week and 365 days a year, as long as there are queued requests.

What is Deep Packet Inspection or DPI?

The Internet traffic management solution that is being applied by Bell Canada is based on network equipment that can perform Deep Packet Inspection (DPI). Deep Packet Inspection is used to examine each of the protocol headers that wrap the content, in order to identify the type of package being transmitted. It is called "Deep Packet Inspection" because it looks beyond the routing addresses, deeper into the packet headers, to determine the type of package or application that is communicating. The actual contents of the communication exchange are not examined, just the protocol headers encapsulating the content. To continue the postal analogy, DPI can look at other identifying characteristics of the envelope, but not inside the envelope (see figure below).



DPI can categorize the mail in real-time

Furthermore, there is evidence that some P2P file sharing applications traverse the network using TCP characteristics to look like web traffic in order to disguise their use. DPI therefore looks for protocol headers, commonly referred to as signatures, that properly identify the traffic as a P2P application regardless of how the application declares itself.

Therefore, before the introduction of DPI, network equipment or routers only looked at the destination IP addresses to make switching or routing decisions. With the use of DPI, it is now possible to properly identify P2P file sharing applications from other applications such as VoIP. Once the P2P file sharing traffic is properly identified, the DPI equipment implements a selective traffic shaping function on the identified P2P traffic. The DPI equipment does not retain the

information that it has reviewed from the packet headers and the content itself is not actually reviewed, analyzed or stored.

Traffic shaping is therefore a relatively simple traffic management technique and could be described as a bandwidth allocation system. During peak periods, P2P traffic is given a certain bandwidth allocation (per hour or per second). If there is more P2P traffic than the allocation allows, the extra P2P traffic is queued up for later delivery. In severe congestion situations, similar to normal traffic behaviour, packets may be dropped. The other non-P2P traffic continues to be processed normally on a first come first served basis. During off-peak periods, when there is no congestion, no bandwidth allocation is applied to any traffic and the network will deliver as much traffic of all types as possible.

As noted above, in congestion situations, routers typically queue or drop packets indiscriminately, including interactive, time sensitive, packets causing degradation to these application sessions. When the network is congested or busy, it is therefore desirable to slow down, but never block, bulk traffic (lower urgency) in order to meet the demands of time sensitive traffic, such as web browsing, Internet banking, web access to Government services, audio or video streaming and VoIP.

Essentially, the Company is using its Internet traffic management solution during peak periods to apply an allocation to the amount of bulk packages being handled and redistributing the excess load of the bulk packages to off-peak periods thereby ensuring reasonable performance for other normal interactive and more time sensitive applications such as web browsing, Internet banking and audio or video streaming. During off-peak periods, all traffic, including bulk P2P file sharing traffic, would continue to maximize the use of all available bandwidth.

NOTICE

This answer is made by Bell Canada, c/o Mirko Bibic, Chief, Regulatory Affairs, 110 O'Connor St., 14th Floor, Ottawa, Ontario K1P 1H1.

TAKE NOTICE that pursuant to section 61 of the *CRTC Telecommunications Rules of Procedure*, the applicant is permitted to mail or deliver or transmit by electronic mail a reply to this answer to the Secretary General of the Canadian Radio-television and Telecommunications Commission, Central Building, 1 Promenade du Portage, Gatineau (Québec) J8X 4B1, and to serve a copy of the reply on the respondent by 21 April 2008.

Service of a copy of the reply may be affected by personal delivery, by electronic mail, or by ordinary mail. In the case of service by personal delivery, it may be affected at the address set out above.

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