April 4, 2008

Director, Telecommunications
Canadian Radio-television and
Telecommunications Commission
Ottawa, Ontario
K1A 0N2

> RE: Network interference (throttling of certain TCPIP packets by Bell).
>   Bell Canada General Tariff Item 5410 - Gateway Access Service (GAS)

Introduction: *Bell Canada is has introduced Deep Packet Inspection (DPI) technologies that inspect private data to discriminate on the performance of point to point circuits and thus limits full transparent access to the ADSL loops as mandated by the CRTC.*

1-a   The CRTC regulates the Bell Canada General Tariff items 5410 and 5420 . Paragraph 2-a of the 5410 tariff summarizes the goal of this service:

> *.... This service will enable a service provider to establish a high speed data access path between its end-user's premises and a Company serving wire centre ...*

1-b   These tariffs were setup in order to provide competitive access to the ADSL loop linking end users to the DSLAMs operated by Bell Canada. Bell Canada now inhibits full access to the ADSL loop by implementing discriminatory network management within a "cloud" that must be transparent. Paragraph 2-(c)-a. of Tariff 5410 defines that "cloud" as a *logical path*. Bell's management of that path must be limited to ensure there is sufficient bandwidth in its "cloud" to provide full access to the ADSL loops by service providers, and the cloud must remain transparent in order to allow service providers to offer the services they wish to offer and Bell Canada has no say in what data is being exchanged between a service provider and its customers.

1-c   Bell Canada must NOT be allowed to discriminate on the private data exchanged between a service provider and its customers. Bell Canada must remain a common carrier that blindly carries data between service providers to their customers.

1-d   GAS (5410) uses of the PPPoE **point-to-point** protocol which establishes a switched virtual circuit to carry data between end user and his service provider. Since PPPoE can be used to encapsulate a number of different protocols, there can be no definition of what data can be carried as part of 5410 and service providers must remain free to choose what networking or application they wish to support . Similarly, for HSA (5420), Ethernet frames are carried between the end user and his service provider in permanent virtual circuits. Therefore, the contents of the PPPoE or Ethernet (GAS/HSA) frames is to be considered private to the end user and their service provider.

2-a   In the provision of 5410-GAS, Bell does not require any hardware which looks inside the packets beyond the 8 byte PPPoE header in order to transparently carry packets in an established PPPoE session between 2 end points. The addition of additional hardware inside the 5410/5420 infrastructure which can inspect and process packet contents must be regarded as superfluous and not be accepted as a part of the 5410/5420 service offerings since these services do not define what data is to be transported in packets.

2-b   Neither 5410-GAS nor 5420-HSA services are based on TCPIP network connectivity. Bell must not manage those services as TCPIP services. In Telecom Order CRTC 2007-22 paragraph 29, Bell agrees by stating that GAS/HSA are **not** a managed IP Virtual Private Network.

2-c   Neither 5410-GAS nor 5420-HSA services provide connectivity to the Internet. As a result, Bell Canada has no right to act as an Internet Service Provider and implement ISP level network management. Bell must be limited to carrying packets transparently between service providers and their customers and let service providers fully define the networking policies they which to implement.

2-d   The most often mentioned platforms for "*throttling*" are Ellacoya, Sandvine and pCube. Documentation on those platforms shows that they perform Deep Packet Inspection of TCPIP packet payloads to detect data patterns belonging to certain popular applications. These platforms are aimed at Internet Service Providers. Some or all of those solutions achieve the performance reduction by injecting forged TCPIP packets in the stream which confuses the applications.

2-e   In its role, as common carrier providing a transparent logical path between service providers and end users, Bell Canada cannot be allowed to manage those paths by looking at private data contents and possibly injecting forged packets. Bell Canada would not be allowed to inject forged packets on similar virtual circuits used to link bank branches with their data centres.

2-f   A clear distinction must be maintained between Bell Canada (provider of CRTC regulated 5410/5420 data services) and Sympatico (an internet service provider). Whatever TCPIP policies Sympatico desires must be implemented within the Sympatico network in order to guarantee separation of Bell's neutral 5410/5420 network from Sympatico's network.

2-g   Because the 3 major throttling platforms all have the ability to collect data on each individual user, (providing breakdown of how much data was transferred for each class of application) Bell Canada can theoretically collect detailed usage data on all individual users. Such data MUST be considered to be proprietary and highly confidential between a service provider and its customers, and Bell must not be allowed to collect such data. Because Bell Canada owns Sympatico, the collection of proprietary data belonging to Sympatico competitors would be akin to industrial espionage. Bell Canada must not collect or access any data which is private to service providers and their customers.

2-h   Bell Canada should be audited to ensure that all those boxes which were recently installed are physically removed from the network used for provision of 5410/5420 and that any of the data collected so far has been destroyed and never made available to any Sympatico employees. If Sympatico or any ISP wish to implement throttling, it must be done on their own premises, and Bell's 5410/5420 installations must remain totally neutral.

2-i   Bell Canada's only communication so far with service providers is a letter from John Sweeney dated March 28 (the "Bell letter" in the CAIP Part 7 submission) provides little detail on what exactly is being done. This not only prevents service providers from informing their own customers of what sort of service they can expect, and which application are no longer usable, but it also sets a precedent that allows Bell Canada to unilaterally change the parameters of the throttling without telling anyone.

3-a   Based on user measurements, Bell Canada reduces throughput down to under 300kbps on lines where ADSL speeds are set to 5000kbps. This is not traffic management, it is crippling of traffic. While Bell mentions only "P2P", many users have reported that their VPN traffic ends up being throttled as well. In fact, because of the way they work, those throttling boxes would end up crippling any link that ends up having certain patterns in the data portion of the packets. The throttling vendors brag about how adaptive their boxes are and how they can configured to catch new applications or new strains of current applications who have found ways to evade detection. What happens when an application Bell Canada doesn't like manages to masquerade as HTTP traffic ? Will Bell then cripple all web traffic ? Where does it stop ?

3-b   Bell Canada's POTS telephone network provides unmetered local service. It is Bell's responsibility to ensure that normally, all calls go through.   There are periods where peak usage may result in a fast-busy signal indicating Bell's lines are oversubscribed. Bell uses load statistics to plan how much capacity to have on voice circuits. When dial-up internet access grew in popularity, this changed calling patterns significantly, with many calls going to large ISPs in a central location and lasting hours instead of minutes. Bell Canada responded by adding additional capacity between Central Offices where needed. It did not respond by listening to conversations and cutting off calls it did not like or degrading voice quality when detecting male voices or modem signals.

3-c   Similarly, Bell is expected to provide adequate capacity in its ADSL "cloud" to generally allow full use of the bandwidth permitted by the ADSL loop to the end user. As the number of ADSL customers grows or usage patterns change, Bell is expected to add capacity to its "cloud" to maintain an adequate level of service that allows full use of the ADSL bandwidth in most circumstances.

3-d   A service provider pays a GAS/HSA for each individual ADSL line. The service provider should have full and unqualified access to the bandwidth of each ADSL line the service provider pays for. A service provider also buys sufficient capacity in the "Aggregated High-Speed Service Provider Interface" (AHSSPI) to support the link between itself and the Bell ADSL cloud.

3-e   Bell is therefore already compensated on the number of customer as well as the total bandwidth generated by those customers. As service providers buy more GAS/HSA units and increase they total AHSSPI bandwidth to handle growth, there is no reason for Bell Canada to try to cripple the bandwidth that the service providers are paying for. Bell Canada should have no problems increasing capacity in its internal ADSL cloud to handle the growth. Service providers should be able to have access to the full ADSL speed to each customer if they buy sufficient AHSSPI capacity to support the aggregated load.

3-f   Ironically, the throttling may reduce revenue for Bell Canada since service providers will not need as many AHSSPI lines to support the same number of customers who can no longer download quickly.

3-g   Sympatico has implemented policies which limit growth in bandwidth usage. They have decided that those limits (monthly limits as well as throttling) will not impact the types of customers they are targeting. This is well within their rights. Meanwhile, other ISPs have embraced new applications and taken on the challenge of providing sufficient bandwidth to the internet as well as buying sufficient AHSSPI lines to handle the ADSL side. It is no surprise that many Sympatico customers are moving to those ISPs to escape the Sympatico restrictions which cripples their types of internet access.

3-h   The CRTC should investigate why Bell Canada would decide to throttle all ISPs since this will result in fewer AHSSPI links being needed. There could be a serious conflict of interest if it could be shown that Bell Canada used its monopoly status on the ADSL service to impose the same Sympatico crippling restrictions to all service providers in order to prevent an exodus of customers from Sympatico.

4-a   Bell Canada may use some "Fair Use" clauses in its arguments to justify the crippling of links it judges as being abused. As long as the 5410/5420 tariffs contain no clauses that define "Fair Use", Bell Canada is in no position to unilaterally decide what is Fair use and what is not. Because 5410/5420 are wholesale offerings, the service providers must have an absolutely clear definition of the service they are buying from Bell so that they can define their own product offering to their own customers.

4-b   Since many service providers sell internet access, general internet usage patterns should be discussed. The Internet is a very dynamic environment that fosters new ideas and new applications. There are early adopters, and there are grand mothers/aunts and many types in between. New applications may be regarded by some as "rogue" because they are used only by early adopters. But before long, they become standard applications on the internet. (HTTP/web browsers were in this situation until they overtook "Gopher" last century).

4-c   Bell has made various public comments to the media since this issue has arisen. Bell Canada thinks that its throttling will not affect business users since it only applies outside busines hours. I would like to remind Bell Canada that there are many small businesses and self employed people in Canada who do not have the luxury of living by Bell Canada's 9-to-16:30 hours and must work long hours at night, and cannot afford to wait hours to download large documents between peers especially when there is a very tight deadline to meet.

4-d   It would be wrong for the Canadian government, through the CRTC, to support the actions Bell Canada has taken to cripple such new applications which have already become extremely popular and essentially replaced older protocols such as FTP to transfer files. Our country should have, as policy, to foster adoption of new technologies and applications instead of fighting them.

         In conclusion, Bell Canada has implemented a system which punishes customers and competitive service providers who have paid for the bandwidth they want to use. There are serious privacy implications with how this system is implemented and definite overstepping of boundaries by Bell Canada which must remain a neutral common carrier and not become an ISP dictating to service providers what applications their customers can and cannot use.

         I urge the CRTC to quickly force Bell to remove the traffic shaping equipment from the ADSL network and send Bell a very clear signal that its role is to manage its cloud by providing sufficient capacity to handle the loads paid by service providers instead of trying to prevent growth as it has now done.

Regards
Jean-François Mezei
Vaxination Infomatique
86 Harwood Gate
Beaconsfield, QC H9W 3A3
jfmezei@vaxination.ca