Overview of competitive internet access via Bell Canada's ADSL infrastructure

Summary: *This document aims to remove the confusion that exists with regards to the role Bell Canada plays in the provision of ADSL services to independent Internet Service Providers. Because important decisions will shortly be made on this service, it is important that all involved parties understand the relationship between Bell Canada, Sympatico and the independent service providers who compete against Sympatico.*
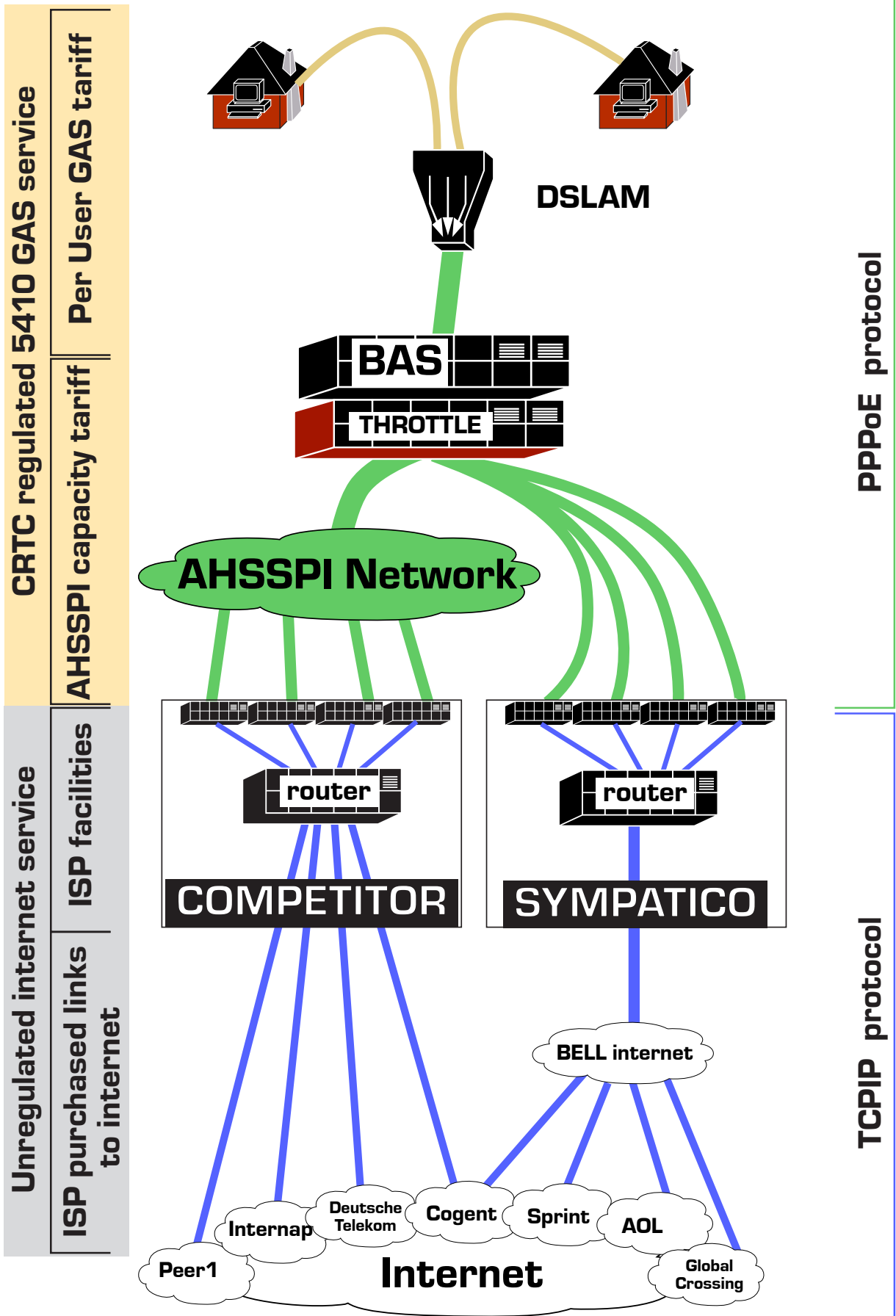
ISPs DO <u>NOT</u> RESELL BELL'S INTERNET SERVICE

Mirko Bibic, the chief of regulatory affairs stated during a media interview that ISPs were reselling a *white label internet service* provided by Bell. This image was repeated many times during interviews. Bell is misleading lawmakers and the media in trying to portray this service as a turnkey internet solution where Bell provides the full internet connectivity and internet network management to the independent ISPs. This is not true.

FACT: The independent service providers purchase from Bell, a CRTC regulated telecommunication service (GAS) that provides no connection to the internet and uses a different protocol from the Internet. This service provides a point to point data connection between ISPs and their customers over the monopoly telephone infrastructure.

FACT: The data being carried is not owned nor managed by Bell and as such, core common carrier principles apply: Bell Canada has no right to inspect the user data without a warrant, and even less right to modify any part of the user data. In this service, its duty is to carry PPPoE frames between 2 points, not manage an internet TCPIP service.

FACT: Bell Canada does not "slow" packets down. At regular intervals, Bell picks a packet and modifies a certain portion of the data (beyond the envelope) to introduce sequencing errors. This is detected by the computers at each end of link and disrupts the flow of packets as retransmission of a series of packet is needed to restore data transfer.

FACT: ISPs purchase from Bell enough capacity to support the demand generated by their customers. Users cannot generate more bandwidth than the ISP has paid for. If Bell sells a certain amount of capacity, it must be able to provide it.

FACT: ISPs buy and implement their own connectivity to the internet and implement their own services, servers, routers and internet service policies. Since they share no internet related infrastructure with Sympatico, there is no reason for Sympatico policies to be imposed on its competitors.

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DSLAM

BAS

THROTTLE

AHSSPI Network

router

router

COMPETITOR

SYMPATICO

BELL internet

Peer1

Internap

Deutsche Telekom

Cogent

Sprint

AOL

Internet

Global Crossing

CRTC regulated 5410 GAS service — *Per User GAS tariff* / *AHSSPI capacity tariff*

Unregulated internet service — *ISP facilities* / *ISP purchased links to internet*

PPPoE protocol

TCPIP protocol

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ADSL *Asynchronous Digital Subscriber Line.* ADSL runs on the copper telephone wires between the residence/office and the DSLAM. Bell Canada has been upgrading Sympatico customers to 7mbps speed, while competitors are still limited to 5mbps. The Upload speed is limited to 800kbps. (mbps: megabits per second, kbps: kilobits per second)

DSLAM *DSL Access Multiplexer.* This device drives the ADSL signals for multiple telephone lines and aggregates the data streams into a trunk line going to a BAS. Originally found in the telephone central switches (CO), Bell has been deploying DSLAMs in the neighbourhood remotes (brown boxes near sidewalks). This not only accommodates the growing demand, but also reduces the distance between the DSLAM and the end user. Shorter distances allow higher ADSL speeds. Sympatico customers are given priority to the DSLAM ports installed in remotes. It is estimated that there are roughly 10,000 DSLAMs installed in the Bell Canada territory.

BAS *Broadband Access Server.* This device combines data streams from many DSLAMs and distributes packets to their respective service providers via data "tunnels". To achieve this, the BAS maintains a table of current PPPoE sessions that link each subscriber to his service provider. Each PPPoE packet contains an 8 byte header/envelope which contains the session identification. The BAS need only look at the PPPoE header to do its job. Packets to Sympatico infrastructure are switched to an internal network. Packets to competing service providers are sent via the AHSSPI network. There are roughly 250 BAS on the Bell Canada territory.

AHSSPI *Aggregated High Speed Service Provider Interface.* This service uses Bell's core network to funnel end user packets from each BAS into fast links to the ISPs. The "pipes" at the narrow end of the funnel are currently limited to 1 giga bits per second (gbps). Additional capacity is obtained by purchasing multiple AHSSPI links. Each ISP purchases sufficient AHSSPI capacity to handle the peak throughput demand of its customer base. Should an ISP not buy sufficient AHSSPI capacity, then the bottleneck happens at the narrow end of the funnel, a portion of the network which only affects that ISP and has no impact on other ISPs or Sympatico. If ISPs purchase sufficient capacity, Bell must ensure its network is able to deliver the services it has committed to selling.

Note: Between the DSLAM and the ISP, the network is owned by Bell. Adding capacity generally involves assigning an unused fibre pair and installing additional network cards. The incremental monthly costs are minimal, despite Bell getting significantly more revenue from ISPs.

ISP FACILITIES

Once packets arrive at the ISP's facilities, the PPPoE payloads are extracted and inserted into the ISP's TCPIP network and begin their journey as internet TCPIP packets . When PPPoE sessions are established between an end user and the ISP, it is the ISP's servers that authenticate and authorise the user, not Bell. The ISPs have their own block of IP addresses which they assign to their customers. These IP addresses are identified by core internet routing servers as belonging to the ISP and not to Bell Canada. Bell Canada has no right to manage internet packets which do not belong to its own network.

The ISPs are in charge of providing mail servers, spam filtering equipment, routing and connections to the internet. ISPs are also responsible for web hosting, access to NNTP, SMTP, DNS servers. They define their own TCPIP policies, such as routing and/or port blocking. These services are completely independent from those provided by Bell Canada and/or Sympatico.

THE INTERNET

The Internet consists of separate but interconnected TCPIP networks. Transit providers are commercial networks that sell access to the internet on a capacity basis. Each transit provider connects to some other transit providers and this allows packets to find some path via a number of networks to reach any destination on the Internet. Transit providers differ from each other in pricing, reliability, performance, number of connections to other networks, geographical footprint and number of points of presence in the areas covered. Routing protocols between networks allow packets to choose the best available route to a destination.

ISP CONNECTIONS TO THE INTERNET

Each ISP purchases links from transit providers who have a point of presence in their city. ISPs can extend their own network, via dedicated links, to a larger city where they can choose from more transit providers. In large cities such as Toronto, there are enough transit providers to provide a very competitive field. The ISP will buy sufficient capacity from one or more transit providers to meet the demand generated by its customers. The selection of providers, and routing policies that manage multiple connections to the internet is all done by the ISP with no involvement from Bell Canada.

As an ISP's customer base grows and/or average usage increases, the ISP will need to purchase additional AHSSPI capacity and additional internet transit capacity. ISPs that offer "unlimited" usage plans do so because they have found good internet transit plans and purchase sufficient AHSSPI capacity to provide good service at profitable levels. They are not doing this on Bell's back.

By choosing the right transit providers and keeping overhead costs low, an ISP can easily beat Sympatico's service levels and limits/restrictions.

Bell Canada has its own TCPIP-based internet-connected network with its own connections to various transit providers. In technical terms it is known as AS 577. Bell also sells internet transit to a number of corporations in Canada (notably the banks). Few independent ISPs buy internet transit from Bell Canada because it is expensive.

Sympatico does not have its own network. Its customers are handed IP addresses that belong to Bell Canada's internet network (AS 577). This means that Bell Canada makes all network management/routing decisions, selects and negotiates with transit providers and does capacity planning. By integrating Sympatico customers into Bell's core network, it blurs the line, especially in terms of how much Bell charges Sympatico for access to the internet.

CONCLUSION

When Bell agrees to a 3 year contract to supply a certain amount of capacity to an ISP, Bell must do whatever it takes to deliver that capacity. Any inability to provide the bandwidth for which an ISP has paid must be solved by Bell adding capacity to its internal backbone to rectify the situation. The nature of the ADSL service prohibits Bell Canada from looking inside and modifying the PPPoE packet payloads. Nothing inside the PPPoE packet payloads belongs to Bell's network and Bell has no right to manage those contents.

What Bell Canada is doing is tantamount to listening to telephone conversations for specific words, and sending a "Beep" to disrupt a conversation whenever such word has been detected, forcing the person to repeat a sentence. The precedent, if allowed to be set, is very serious and would undermine the concept of a trustable common carrier in Canada.

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