

From: Vanessa Oakley [mailto:Vanessa.Oakley@telecom.co.nz]
Sent: Monday, 3 October 2005 4:03 p.m.
To: Chris Abbott
Cc: Rachel McLauchlan
Subject: UBS - additional information

Dear Chris

Telecom responds to the Commission's questions of Friday below.

Question 1: *What is the Peak Information Rate ("PIR") set in the service profile at the BRAS for the Jetstream "full-speed" services?*

This is an unconstrained service with no defined PIR so they can run up to their maximum line rate. Whether a Full Speed service runs at 2Mbps or 7Mbps it uses the same amount of spectrum – more than an otherwise similar service with a PIR set to 2 Mbps. We therefore repeat all our previous submissions as to why Telecom has had to move away from unconstrained services and why making a final determination in line with the draft determination will be unworkable. The Commission may wish to refer back to Telecom's 20 May submissions (section C1.2).

Question 2: *In the workshop transcript, Dr Milner noted that, in respect of Jetstream full-speed services, if the customer does not achieve 2Mbps (or above) that the customer is given the option of not accepting the service. (TelstraClear Bitstream Workshop, 21 July 2005, Commission transcript p.63) Under what specific circumstances would a customer who purchases Jetstream full-speed fail to achieve 2Mbps or above?*

The Commission subsequently issued a clarification as follows:

As discussed, the Commission is aware of the general circumstances and reasons why end-users may not be able to achieve specific speeds using ADSL. However, the Commission's request is focussed only on Jetstream "full-speed" with a minimum downstream speed of 2Mbps. This is distinct from other Jetstream services with maximum achievable speeds of 256k, 1Mb and 2Mb.

The Commission has requested that Telecom provide details of circumstances where a customer purchasing the full-speed service might fail to achieve 2Mbps or above. While this may include the reasons that Telecom has already provided, I also note that additional reasons may exist (such as sub-tendered DSLAMs for example).

In Telecom's response (dated 26 September 2005) to the Commission's information request dated 20 September 2005, Telecom advised the Commission of the history of full speed plans. At paragraphs 9 and 10 of the 26 September letter, Telecom confirmed that there were no speed guarantees for any Jetstream plans including full speed services.

For full speed services it is *generally expected* (not guaranteed) that they will achieve speeds between 2Mbps and 7Mbps. 2Mbps is *not* however, as the Commission indicates, a hard and fast minimum speed. Inability to achieve 2Mbps at the time of ordering a full speed plan means (as previously advised) that a customer may cancel a full speed service and be refunded.

We repeat all our previous submissions to the Commission as to the issues that affect the speed that can be achieved on a particular line. These include:

- The length (transmission loss) of the pair
- Incorrect cable records (conductor type and length(s) of cable pair shown in records is different from what is actually in the ground).
- Multiples (bridge taps) on the cable.
- Cable deterioration (e.g. moisture, bad joints) affecting above voice performance - Routine cable maintenance only measures voice frequency (DC to 4Khz) performance.
- Cable electrical balance
- Poor building cable between Telecom entry point and the modem
- Interference from other systems in the cable including technologies other than ADSL such as HDB3, HDSL and SHDSL. We do not move these systems in the cable or deliberately avoid them in the binder for full rate services as the services on these other technologies take spectral priority over non rate limited ADSL services. The noise signature of HDB3 varies rapidly so the noise seen by the modem at the time it synchronises can be momentarily higher than the average noise level.
- External noise , e.g radio interference, electrical motors

However apart from the ADSL line rate not achieving 2Mb/s or above, for all the reasons listed above, a further circumstances where 2Mb/s or higher will not be achieved in practice is where the transmission link from the DSLAM to the network has a lower peak line speed than the ADSL line rate.

Because customer packets are carried within other transport protocols i.e. ATM and PPP, the maximum rate at which data can pass to an end user is about 85% of the maximum transport (backhaul) aggregate peak link speed. So any DSLAM served with only a single 2.048Mb/s link will provide at best a maximum download speed of 1.7 Mbs even if the line ADSL line is synchronised at a higher line speed than that. Similarly for a 2 x E1 link, then the maximum data rate that can be achieved is around 3.5Mb/s. The majority of DSLAMs with E1 backhaul do not need any more than 2 x 2.048Mb/s of capacity for traffic reasons and are not equipped with any more. This is almost all Conklins and some subtended Alcatel DSLAMs.

Please let me know if you have any queries.

Regards

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