Trentham
Upper Hutt.

7th March 2008

Telecommunications Commissioner
Commerce Commission
Unisys House
The Terrace
Wellington.

Proposal to launch study into
Next Generation Network issues.

The following response represents my personal view only.

Dear Sir,

Thank you for the opportunity to respond to the Commission's study into "NGN issues". Having read the four page proposal, I have carefully considered several of the aspects. I am disappointed that somehow Telecom's inability to effectively deliver IP based services (and thus build an NGN) has become a regulation discussion.

I am puzzled why there are perceived to be, or might be, issues around TNZ's NGN deployment, and why any of these might affect "fee for service" between carriers.

From the perspective of a small startup company, interacting with Telecom is no different from interacting with any other national or international telco. We know how to interconnect at the IP and packet level. We know how to interact with other (NZ and international) carriers at a VOIP level. The fact that TNZ has not yet created a VOIP interconnect is not really a matter for other carriers.

The central issue around a VOIP interconnect with TNZ is the muddiness, or otherwise, of the proposed pricing model.

The mechanism for creation of a VOIP interconnect is extremely simple when presented as a fee for service.

My opening position is that TNZ should provide Industry Regulated VOIP interconnect at two disparate locations within New Zealand. The APE and WIX are the two obvious places, neatly dealing to the peering arrangements at the same time.

The infrastructure can be separate from the "Internet" if organisations have concerns over quality.

SIP V2 signalling is strongly preferred. 1Gbps UTP or fibre physical interconnect.

Price of PSTN interconnect.
I strongly urge the Commission to consider the global inter-carrier connect rates when considering local NZ PSTN interconnect pricing. I attach the Rate Card for FX's global offering to the NZ Government, for consideration when setting the rates. For FX to call New York from Wellington is a retail rate of NZ$0.03c, and a wholesale rate substantially less. FX has obtained wholesale rates into the NZ PSTN today at similar pricing without any direct relationship with TNZ.

There is an opportunity for an extremely simple price for the wholesale PSTN rate. 1c/min.

The Commerce Commission should grasp the opportunity of a very simple price model for calls as a total opportunity for the country, and not allow itself to be swayed by “mindless complexity”, both technical and commercial, from the incumbent.

From Telecom’s own website (17/3/2008), for a customer without “special” arrangements:-

The current cost of a business call within the local area is 4.5c/min.
The current cost of a call from Wellington to Auckland is 18/c min
The current cost of a call from Wellington to New York is 65/c min.

This is “fantasy pricing” when you compare this with global carrier interconnect rates with ALL of NZ’s major trading partners of around half the lowest price quoted above.

There is no justification, based on the pricing submitted, for any regional loading or regionalised pricing whatsover. Any national call, delivered to TNZ at either the APE and the WIX simply costs $0.01c/min.

Any call, presented by TNZ at the APE and WIX, for termination on another carriers network in NZ, may be charged to TNZ at $0.01c/min.

The interconnect rate should be the same in both directions.

At that point, Telecom’s need to build an NGN is insulated from the rest of the industry. We would be happy to provide an insight into the national VOIP pricing we have offered to the Government, but why the industry needs to go through professional prevarication for years while Telecom gets its act together with an NGN is not something I wish to waste my time on.

FX Networks, in building it’s alternative fibre optic network, has moved the optical network back haul business in NZ from a cosy duopoly (TNZ and TCNZ) where backhaul was simply neither available or sold to customers, only services, to 5 major competitors. (TNZ, TCNZ, Vodafone, Kordia and FX). Every one of those competitors has an internet division (Xtra, Paradise or Clear, Ihug, Orcon and FX).

Since each competitor now has unrestricted access to backhaul bandwidth, and a service division, there appears little need to regulate any of this stuff. FX itself, as the smallest entrant by far has no difficulty interconnecting with any of the others, including TNZ. Both Vodafone and Kordia have their own access networks, independent of TNZ

Prior to responding to the CC document, it would be useful to point out that FX is following the script set out by David Isenberg, an AT&T researcher in his seminal 1997 paper, “The Rise of the Stupid Network”. I urge, nay insist that if any Commerce Commission staff involved in this deliberation have not read this paper, then this places the commission at a serious disadvantage. http://www.isen.com.

So, in 2008, I find myself responding to a Commerce Commission paper, clearly created with orderly maintenance of weird, old, slow expensive stuff, when the world has passed most of this by.

TNZ’s management of interfaces, connections, commercials, cabinetization, exchange access and a variety of other relationships is designed to ensure Telecom’s primacy in setting the specifications and agenda for access to the TNZ network. In this manner, they are performing an exemplary job in maintaining shareholder value to delay as long as possible, the inevitable decline in revenue and influence.

I hope the Commerce Commission will devote itself to creating an environment that allows for transparent and simple pricing between providers for the benefit of the country, rather than allow the incumbent carrier to set the (usually ludicrous) terms and conditions for interconnect.

2. Scope of study

Transition from a PSTN to an NGN environment gives rise to:

- *opportunities for innovative services to be delivered to end users;*
  - why cannot the customers implement their own services?
  - Who knows what these service will be?

- *opportunities for achieving greater efficiencies and cost savings*
  - for whom, the customer? Or the operator?

- *significant technical and operational design, and implementation, issues;*
  - There are none that we are aware of.
  - This is an extremely simple technical interconnect, and it is disingenuous to suggest that this is technically hard. It might be for TNZ, but that is a completely separate problem, and nothing to do with NGN.

- *uncertainty for business plans and business models,*
  - for whom?

- *including sustainable models for competitive entry;*
  - The internet allows anyone to come into the market.

- *uncertainty for investors;*
  - The uncertainty for investors is driven by the extremely rapid technological change and extreme price competition. Unless investors have a direct intimate knowledge of the market, they should not be investing in it.

- *regulatory and competition issues.*
  - Hmmmm, don't see the problem with plenty of emerging competition.

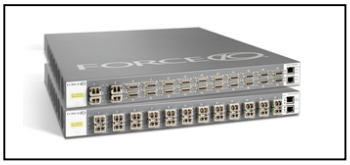
- *concern for continuity of service for end users.*
  - A perfectly rational concern, completely ignored by the incumbent in the data communications market. TNZ do an excellent job with the basic domestic handset market.
  - Where the customer takes on the service delivery himself, then it would be difficult to mandate this at the service level, particularly where new services are changing all the time.

The Commission wishes to hear from the industry on the scope of the study and interaction with other processes. The study may include discussion on:

- *market and technology trends and developments, highlighting the effect these may have on industry structure*
  - Modern enterprise IP switching and routing product has a market life of approximately 6 months. If the product is mildy successful, then it might last 18 months before a revision.
  - Further there is extreme price variance.

Take this example of extreme price change driving the packet telecommunications industry today.

Force 10, 24 ports of 10Gbps
1 Rack Unit in height
240Gbps switching throughput
(more than the whole of NZ requires)
NZ$18,000 each, plus optics extra.



Kamaguza Switch
1 Rack Unit in height
roughly 10Gbps thoughput

NZ$220, plus optics extra.

What can we learn from this example?

1/ The cost of a physical box and PSU is less than NZ$200.
2/ The price of the high performance box is driven by complex software.
If the box were succesful, then the cost to duplicate software is ???
3/ Both these assemblies are less powerful in CPU terms than a basic PC.
I understand the cost of a PC motherboard assembly to be NZ$100-200

Repeat this example for Wavelength Division Multiplexing at 10Gbps.

Cisco DWDM
(FX actually deploys this)
currently about 40Gbps
Cost approximately NZ$200K

New Company DWDM
1 Rack Unit
currently 40Gbps
cost approximately NZ$40K

The point of this small illustration is that the box in the bottom right has a potential cost of the mechanical components of between NZ$200 and $1000. There might be some optical components, however the Chinese electronics industry (both PRC and DRC) has shown itself adept at manufacturing anything at approaching cost price.

The Commision may care to consider the rise of Asterisk, a GPL'd software PABX capable of 80 lines. The cost of implementation is the price of a PC, and a few hours. The software is free.

Voip phones are $200 each. So I can kit out a 80 person office for $16K for phones, a couple of Gigabit ethernet switches ($2000) and several servers (MS and PBX). All I ask is a gigabit access to a service provider who can deal with a router, a DNS entry and SIP trunks. That is all. Tell me why I would want to buy a overly complex Layer 3 network with very modest performance?

Conclusions.

How does an emerging telco deal with this conundrum? Avoiding doing services is one way. Just build pipes. Smart customers can deal with this. Dumb customers can pay a [service company, reseller, town phone company, integrator] to do it for him. The idea that a single central company somehow mandates "services" is absurd.

Is it possible to imagine a large Telco implementing a "Facebook" or "Google" service. They would dearly love to, however time and history are against them.

Re-read David Isenberg's paper at this point to reflect on the pattern.

3. Aims of the study

The overall aim of the study is to work towards a strategic view on NGN issues bearing in mind the promotion of competition for the long term benefit of end users, with no particular bias for, or against, future regulation.

The Commission expects to:

- *Provide a roadmap for industry and the market so that there is a common understanding of the issues*

  This seems a bold strategy for an industry in a whirlwind of change.

- *Develop a robust analytical framework for assessing the impact of NGN on competition issues*

  I'm not sure the Commission is even on the right track with thinking that a central NGN will have influence at the speed of change the technology market is changing.

- *Provide a strategic assessment of the likely impact of technological change on market structure and competition;*

  I think the ComCom may care to let the transition from a two elephant duopoly to a 5 organisation competitive market settle down before imposing further substantive change. Companies do not like regulation or change.

- *Give increased certainty to end users and stakeholders by providing guidance as to likely regulatory responses to market developments – for example, to identify likely triggers for regulatory forebearance or intervention;*

If the regulatory model restricts itself to interconnection pricing and practical transport issues, then there is an opportunity to avoid significant market intervention, surely the mark of a successful market.

- *Explore any joint industry processes which could provide ongoing transparency on NGN issues;*

Arm twisting TNZ to provide a generic SIP/VOIP interface model, rather than the absurd SS7 interconnect ($$$$) and unfavourable (to the rest of the industry) commercial terms around it. TNZ is unlikely to agree to it, as it directly threatens their revenue model. (But hang on a second, Skype has already set the public expectation that Voice is free, underneath a flat rate data connection.)

- *interconnection requirements in an NGN environment;*

Ethernet at a connection rate of 100Mbps, 1Gbps, or 10Gbps. Packets Size <1550 bytes. UTP or optical cable. The greater than 1550 byte packets option is really important.

- *whether new access products and services are needed to provide and maintain competition in the access network; and*

Access to pipes, optical cable, wires and ducts. (Eg the ACCC model to permit other telcos to pull optical cables through Telstra ducts).

Access to run VDSL (50Mbps) over TNZ copper, rather than be restricted to DSLAM type X.

If humankind can retrieve space data signals from billions of kilometers across the void, then doing cool data rates across 5km of copper does not seem insurmountable. I could imagine two pizza boxes at each on of a "telco dry copper pair" doing astonishing adaptive transmission.

- *other areas that may raise competition and regulatory issues in the future.*

Basically anything where real margin exists will be regarded by the market as fair game.

4. Interaction with key stakeholders and other processes

In preparing this proposal the Commission is mindful of the wide range of stakeholders and other processes that they may be engaged in. As the Commission proposes to carry out this study alongside those other processes, the Commission wishes to engage from the outset with stakeholders, and particularly industry, in an efficient way to avoid duplication and coordinate the processes.

There are two key processes considering NGN related issues.

First, in the pending operational separation process between the Minister and Telecom, it is currently proposed that:

- *there will be further industry discussion on an approach to peering[1]; and*

There should be no discussion at all. Make TNZ and TCNZ peer at the APE and the WIX. End of story. Ping them for treating national traffic as international traffic, and tariffing as international. (an excellent trick, they get paid twice at the premium rate.)

There are very limited reasons why additional peering points are needed or required.

- *the separation process must provide for a consultation process between Telecom and service providers about the approach to IP interconnection covering at least:*
    - *the transition for PSTN interconnection for voice services to IP interconnection for voice services; and*
    - 2 ways to do this:-
        - Get TNZ to shove a Nextone (or similar) box between the steam driven PSTN and the real world. Provide SIP at the L48, the Skytower and the WIX (which is a distributed exchange). Set the tarrifs appropriately.

      Or if they prevaricate (which they will)

[1] Clause 49(4) of the Minister's determination dated 27 September 2007

Provide an industry funded set of Nextone boxes for anyone to connect to (Voice Peering) and mandate a single connection to TNZ. (Many Carriers has already built all this.)

- *the introduction of IP interconnection for virtual private networks[2].*

  This already exists, it is called the internet. You can build a private quality internet, with your own quality standards over private pipes, or you can trust to the internet itself. If the customer can buy plain pipes from the telco, with packet sizes of greater then 1550 bytes, then customer can do what he likes.

  A critical component is that the IP packet carrier is not permitted to drop packets, interleave packets, apply nasty QoS conditions and other artificial silliness. These matters of pipe performance and quality is where the Commission may care to direct its energies.

- *Telecom Wholesale establish a comprehensive industry-wide NGN consultation programme*

  The Telecom consultation program is essentially designed to impede meaningful change, except where Telecom can extract commercial value. I have never seen anything useful come out of this foolishness.

The Commission's study would not affect these obligations. However, it would expect synergies to arise from sharing information, use of consultative forums for dual purposes, or from common membership of industry working parties. Any commercial proposals that are generated would also inform the Commission's study.

The second area is the work of the Telecommunications Carriers' Forum ("TCF") which plays an important role in the New Zealand telecommunications industry. The Commission has acknowledged the work of the industry in the TCF working parties that were established to consider technical and operational issues relating to unbundled local loop and unbundled bitstream access services. The reports of those working parties informed Telecom's standard terms proposals and the Commission's standard terms determination processes.

The TCF is a body weighted very badly in favour of the market status quo. The voting tiers mean that tier three votes only are possible when tier one and tier two are either not present, or there is not a quorum. The mechanism which proposals are submitted to vote mean that a proposal, however meritorious, is unlikely to reach acceptance unless it suits the incumbents. This is not a mechanism designed to facilitate change.

For a small company wishing to innovate, the TCF is not a suitable vehicle.

At this stage, the Forum has yet to develop a work program for dealing with NGN issues, but the Commission understands that this is likely to be an important work stream during the coming year. The efficiency of that process will be enhanced by Commission participation in any TCF working parties that are set up to deal with NGN issues. The output of such working parties would be taken into account in the Commission's processes. As with the Telecom process there may be opportunities for sharing information and other consultative opportunities.

Many (in fact almost all) major global Voice carriers interconnect at the VOIP level. H323v2 mandated by the ITU is typically the mechanism (although SIP is repidly replacing H323). This is

[2] ibid, clause 49A as inserted by clause 8 of the Minister's amending determination dated 24 December 2007

significantly cheaper and more efficient that interconnect using SS7. I have personally concluded 2 deals recently with both overseas and local carriers for global transmission of VOIP.

So it if perfectly technically feasible to interconnect today with a technically competent carrier with VOIP. There are well understood interoperation mechanisms available today.

Here is where the commission should grasp the nettle. There are two choices.

Let the industry wait while the incumbent sorts out how to build an NGN for public consumption.

Or:-

Let the newly emerging competitive world of the 4 second tier voice carriers and the 4 backbone carriers (total of 8 companies with major investments) with their own independent backbones and internet divisions directly connect with the incumbent at the VOIP level. They can either connect individually or en mass.

The technical issues of VOIP interconnect are simple and have been around for years. So the core issue is setting the price of NZ Voice peering, and the interconnect rates, and the issue of new market entrants being able to compete on a fair and level playing field.

I think the Commission should restrict itself to pipes, performance and interconnect. This does not really have anything to do with an NGN per se.

The Commission has done an excellent job with LLU. Minister Cunliffe should be congratulated for helping to steer a new course permitting real telecommunications competition to emerge in NZ. There is an opportunity now to simply set the VOIP interconnect rate and set some standards around packet transmission, and let the market take care of the rest.

The commission may care to look at the Australian CCC Telecommunications regulation, and pick the most appropriate pieces for use in NZ.

The commission should, in my opinion, assist with addressing the issues around new building construction and duct access. When new buildings of any size are constructed, there should be reasonable building entry for telecommunications services. (50mm for smaller buildings, 100mm for larger buildings or housing estates.) Modern housing estates all now have underground services (including power) and a single, direct buried copper pair is not the most technically innovative solution in 2008. By laying extremely inexpensive plastic duct, alternate carriers have an opportunity to provide services without economically ruinous digging.

A final matter the Commission might care to address is real line performance under Internet Protocol. Current DSL performance is less than optimum. Establishing some meaningful performance metrics for all telecommunications providers would provide some welcome relief for customers. IP Carriers should not be permitted to apply shaping or packet interleaving, or drop packets as a mechanism to limit customer access. IP Carriers should however be able to simply police the traffic (ie rate limit) to the speed agreed in the customer contract.

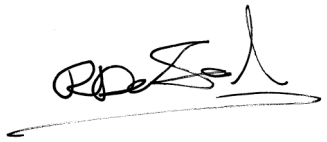
In a complex IP network, it is reasonable to drop packets. However this is very different from inserting equipment specifically to drop or interleave packets and make some services unworkable.

Customers have a reasonable expectation that if they have paid for a 512Kbps circuit, then they should be able to obtain a minimum of 512kbps at all times to one or several sites closely associated with the APE or WIX peering exchanges.
The performance “peers” should be outside of the control of the various carriers, and should provide respected measures of performance.

I have not addressed the problem of remote rural communities receiving fibre optic networking. It is opportune though to point out that rural customers have no difficulty paying for and installing their own fibre when the benefits are clear to them.

I thank the Commission for the opportunity to provide some input to their proposed study, and say again these are my personal views, not the views of companies I am associated with.

Yours Faithfully



Roger De Salis