Next Generation Networks
TUANZ response to the Commerce Commission's Discussion Paper
Dated 24 December 2008

Question 1
What are your views on the approach to development of the market framework and industry consultation that should be considered in New Zealand?

The consultation to date appears comprehensive. It's important that users, especially those responsible for the communications needs of large private network owners, understand the implications of the next generation architecture on existing systems and can plan to migrate to a new environment. Co-operation between all service providers at all layers, as well as end users, will be essential, and a transparent approach such as this will enable the necessary dialogues to take place.

The model implemented in Ireland – a single, independent overseer, would appear to best match the NZ industry and could probably be driven by a TUANZ/Commerce Commission collaboration – as appears to be happening in any event.

TUANZ notes the Commission's reference to the mis-alignment between the parties that bear the costs of investment, and those who receive the economic and social benefits. Modern electronic communication has enormous scope to transform the way in which a multiplicity of services are provided, and thus will gradually draw some revenue from other markets such as transport. The parties that deliver the investment will over time be rewarded substantially by growth in the scope and scale of the market in which they operate. Ensuring that they capture the rewards enabled by this transformation is a marketing challenge for the infrastructure investors, but in the early stages may need to be supported by government to offset any timing disparity between the enabling of the network, and that of the services that will run across it.

Question 2
Do these core principles provide a useful underpinning for considering NGN issues, or whether they should be modified or supplemented?

TUANZ considers them comprehensive. It may prove sensible to enhance international collaboration around industry self regulation (particularly regarding technical and legal issues such as content and copyright) and the need to have a provision for fair geographic coverage, whether that be wired or wireless.

In the event of significant market failure, the core principles should be revisited.

TUANZ agrees in principle that regulation should be reviewed over time, but cautions against any absolute assumption that regulation should be scaled back as competition develops. Regulation will always have some kind of role in a network industry, and the fact that competition has emerged does not automatically constitute an argument for repeal. An analogy can be drawn with road rules – an absence of head-on collisions does not mean that the basic requirement to drive on the left of the road should be repealed.

Question 3
Are there additional elements that have to be taken into account when defining NGN? If so, what are the additional elements, why should they be taken into account and what impact do they have?

Security is one area for consideration. Any public IP network is inherently not to be trusted (despite the best efforts of the service providers to incorporate security – particularly for Internet-based services, although less so for Virtual Private Networks) and it is incumbent upon the end user to ensure their own system's integrity.

Question 4
What do you think IMS fulfils? Is it necessary, or are there other ways of fulfilling its function? What are the implications of this layer for the future of NGNs?

IMS caters for the needs of differing end-user devices accessing common content. However, it has the potential to create vertical integration if not carefully managed.

Question 5
Where and how should the balance between coverage and speed be struck?

TUANZ has long established a long term goal of fibre to every home, business, school, farm and marae – everywhere that New Zealanders live, work and travel.

We are encouraged by the multiplicity of business models that are emerging, many of them from investors other than traditional telecommunications companies. Contrasting examples include the fibre optic innovation by Vector in densely-populated areas of Auckland, and that by Inspire.net which has livened up New Zealand's first fibre-enabled farms on the outskirts of Eketahuna. Given the emergence of that kind of diversity, TUANZ has faith that most or all areas of New Zealand will, over time, benefit from ultra-fast fibre at which stage speed will cease to be a constraint.

We do recognise that if an assumption is made that the pool of investment is limited, there is a trade off between medium speeds for many and high speeds for a few. This will be a dilemma for the government to deal with in its planned investment in the short term.

We strongly urge that fibre to the customer premises be the unwavering standard and goal. That is the only way New Zealand can safeguard the interests of future generations.

Question 6

Is industry consultation necessary on network design for NGN?

TUANZ has long supported the development for a national network architecture that will enable multiple networks throughout the country to interconnect with each other. Our "Green Paper" entitled "Toward a National Digital Architecture" published in November 2008 outlines the rationale for this concept in detail and is attached as an appendix to this Submission.

We also believe that in order to correctly gauge how NGNs are to be built to maximise the usage to the community, it is essential that investors gain a firm understanding of how businesses would like to use them. Previously, the telecommunications industry has provided network capacity and services to business end users. In the NGN environment the boundaries between the role of a service provider, and that of an end user, become increasingly blurred. Open dialogue between the industry collectively, and its customers collectively, will ensure maximum benefit and minimum risk for both parties.

Question 7
How does the deployment of NGN change bottleneck characteristics? Is access to the infrastructure still an issue? If not, what other elements could become important?

The control layer could become an issue. Backhaul continues to be an issue particularly if services are not decoupled from their transport layer.

Question 8
Part of the BIF is targeted at deploying open access urban fibre networks and the Government has indicated that it will set aside $1.5 billion for open access FTTH rollout that will reach 75% of the population. What is your understanding about what is meant by open access?

TUANZ believes strongly that wherever public funding is involved the resulting network should be 'open access' – meaning that the network is available to all service providers on an equal basis. Ideally, the same should apply in some circumstances to privately-funded networks, however this aspiration needs to be weighed against the impact on a new entrant's business case.

Question 9
What are the areas that are not likely to be commercially funded?

Over time TUANZ would hope that very nearly all of New Zealand would become commercially viable, given the expanding range of technologies, the user self help options increasingly emerging in isolated areas, and alternative technologies. However, we recognise there will be many areas where the investment precedes the profitable return by a period long enough to make the business case very challenging. In those cases, and where the social or economic case is sufficient, we support public funding playing a role at least for the medium term.

Question 10
What do you believe is needed to drive broadband penetration and speed in the future in New Zealand?

Education, health, farm management and the provision of government services are among the most significant drivers. Environmental sustainability also demands more connectivity in order to more efficiently manage natural resources and displace carbon-hungry journeys with digital ones.

To accelerate penetration and uptake, New Zealand needs more affordable digital content, operating budgets within government institutions and the private sector that factor in access to high speed broadband. Government has a key role in developing applications for health, education, and the aging population. Furthermore, there is need for reduced cost and a greater range of services, including policy settings that encourage on-demand IPTV and multimedia content.

i. Do you agree that cost savings are one of the core drivers for NGN deployment in New Zealand?

Agreed. Government departmental budgets need to make the linkage between operational cost savings through improved productivity against investment in infrastructure to deliver new services. However, many of the cost savings will arise form the displacement of economic activities that currently reside outside the telecommunications sector.

ii. How will competition enable innovation?

Competition will inevitably lead to better (faster, cheaper) infrastructure, providing the commercial gateway and capacity for new bandwidth-hungry services and ideas, particularly in video and broadcast. Imagine running a night pottery class from your home workshop in Russell, language classes from your lounge in Coatesville, etc, to international and local students.

Question 11
Many are of the view that the pipes should be built first and services will then follow. Others believe that a lack of services and demand for broadband services are an issue. What is your view?

If bandwidth were somehow unlimited and free, the markets and peoples' imagination would very rapidly find ways to use it to enhance their economic and social well-being. It could be said that it is not possible to have too much bandwidth. By taking away bandwidth restrictions, services will follow.

The transformational potential of fibre has been well illustrated in many jurisdictions and the evidence is increasing daily. New Zealand's diversity, isolation and innovativeness make us potentially one of the countries best able to leverage the benefits of ultra fast connectivity for economic and social good.

Doubts expressed by some should not be confused with the natural desire of owners of existing infrastructure to delay the availability of new technology so as to eke out the maximum residual income form the technology they already have.

It should be noted too, that the world's four most advanced nations in FTTH are close partners of this country in trade and tourism, all within a daily, single sector flight from Auckland – namely Japan, Korea, Taiwan and Hong Kong. This underlines the need for New Zealand to move ahead so we can communicate at their speeds.

Question 12
Is content ownership or access to content a hindrance to the development of broadband in the New Zealand market?

TUANZ would argue that the slow development of broadband access is a hindrance to content development. However there are issues with access to content, particularly in the Education sector.

Question 13
How is the nature of New Zealand's subscription TV market likely to impact the development and take up of NGN in New Zealand?

Sky already has plans for terrestrial services which cannot be deployed due to lack of true high speed broadband and fibre deployment. It is unlikely that this will have a major impact in the early years, but it will become significant over time. As the IP service matures TUANZ expects there to be a slow migration away from Satellite, and the potential to access overseas IPTV offerings for education and entertainment will become a significant factor. Access of this kind will in a short time become an expectation of any internationally mobile global citizen.

Question 14
Is the service scenario approach seen as a useful one for the purpose of studying the New Zealand NGN market, and if so what would be the elements of practical and relevant scenarios?

The three scenarios provide a useful way to look at the issues. TUANZ believes the focus must definitely be on Scenario 3 – characterised by video on demand and remote health care. Next generation networks are a transformational, inter-generational step. It is crucial that those planning the policy look as far ahead as can possibly be envisaged, otherwise New Zealand will be left in a time warp that becomes apparent even before the new networks are commissioned. This is most assuredly a time to think boldly and ambitiously – we are talking about re-wiring New Zealand to meet the needs of several generations ahead.

In the commercial context, TUANZ considers that business traffic should be included in the list of services. This would include Datacentres to users, and SaaS type applications. It should also include business virtual private networks,

Question 15
What other implications for the value chain of traditional operators and suppliers can be expected when moving towards an all-IP environment?

Service providers may well become infrastructure investors to ensure their content can be accessed. Traditional operators and suppliers will need to source revenue for new innovative services in order to enable infrastructure costs to remain low.

Question 16
What other effects on the competitive environment could be expected when rolling out next generation networks?

There will be a need for more International bandwidth and for NGN operators to peer not only with their domestic competition but with international operators as well. TUANZ believe there will be a need for greater bandwidth to the home providing the users with far greater choice of content, potentially with overseas operators being able to compete against SKY.

Interoperability at the service control layer will be essential and IPV6 has a role to play here as well.

Question 17
How do these effects influence the roll out of next generation networks and innovative services?

It is unlikely that added overseas competition for services will inhibit the technical rollout but more likely that technical, commercial and legal inhibitors on overseas content providers may be implemented in order to protect domestic income. This may be a future issue that requires monitoring.

Question 18
To what extent is symmetric speed or capacity necessary to provide future services to customers?

At present, the low up, high down capacity model is satisfactory for the vast majority of end users whose traffic profile is predominantly incoming traffic.

However, symmetric speeds will enable applications such as HD videoconferencing (as opposed to low-res Skype) ,home and farm security cameras streaming to central monitoring points, and teleworking both locally and internationally.

It should be noted however that symmetrical services may encourage peer-to-peer file sharing networks to flourish, bringing associated copyright issues that will need to be dealt with.

TUANZ cannot predict in detail what the future will bring. Consider how YouTube and image sharing applications such as Flickr have dramatically changed the profile of users in just the last few years. At present, collaboration is in vogue, but in the future it is impossible to be specific. What is evident, the availability of symmetrical services will enable innovation and the development of new applications that we might only imagine. New Zealand without the connectivity to participate in those applications, would be able only to sit and watch the world go by.

Question 19
What are the most important and significant drivers of bandwidth demand?

Important could be considered a subjective term. Video and high resolution imagery (for example medical imagery applications) will be the most significant drivers of demand with telepresence, IPTV, health etc becoming more predominant in the market. The potential for telepresence in the business and education sectors among others is significant, particularly in the rural areas where there are difficulties in attracting and retaining staff.

Question 20
Is a differentiation of classes of services an appropriate approach for solving QoS degradation for end-to-end services?

Diffserv is currently the most prolific QoS mechanism deployed in the world. It is standards-based and can seamlessly integrate across the NGN/customer demarcation. Any other model deployed will need to match this seamlessness for true deterministic end-to-end QoS.

It should be noted that over provisioning of capacity will reduce the need for service differentiation, but it bottlenecks will invariably exist based on location, including international capacity.

Question 21
What issues and effects could possibly arise due to a differentiation of services classes?

One issue that is likely to occur with multiple NGN provider networks is that the QoS definitions and configurations will not directly map to each other and nor will the commercial constructs – such as SLAs. This needs to be understood, particularly by multinational customers looking for consistency on their network – a chain is as strong as its weakest link.

A national architecture, such that TUANZ has long argued for, would ensure Inter-operability between new regional networks and other NGN service providers as well as international traffic.

From a residential user perspective there may be a need to understand the trade off between quality and price, It might be that some form of universal descriptor of service standards would be helpful – the airline industry has shown a useful lead by coining the terms “Business” and “Economy” and there may be lessons here for telecommunications.

Cost is also clearly an issue, as the higher QoS setting, the higher the cost. TUANZ members have indicated they have issues with Telecom’s One Office product because does not allow bursting between the real time and interactive queues meaning it is not strictly QoS!

Question 22
Will the approaches to pricing change for NGN, particularly where different classes of service are offered?

TUANZ would expect this to be the case, particularly for national and international traffic is concerned as classes of service affect capacity on the backbone.

Question 23
Beyond the costs for NGN core, access, CPE and drop lead, are there additional costing elements to be taken into account? If so, what is their likely impact?

TUANZ acknowledges that there is considerable cost involved in management, provisioning, billing and equipment lifecycle. These have generally be considered to be between 10-20% of the cost, however with the potential for more cost effective network infrastructure these types of ratios may well change.

Question 24
Do you agree that in an NGN environment, a higher proportion of cost of the network is shared in common cost? What in you view is the best method for allocating costs, i.e., should it be based on volume, minutes or new drivers such as capacity?

Costs should be based on a combination of the service required (capacity, QoS) and potentially the usage it gets (volume). However the more complex the billing the greater the cost to administer and by eliminating the need to monitor volume, the easier it is to bill.

Question 25
What is your view on the benefits and constraints of PON (Passive Optical Network) and P2P (Point to Point)?

TUANZ acknowledges that PON is generally cheaper to deploy that P2P but consider PON is only suitable as a short term and last choice solution to difficult rural areas. Aside from the difficulty it presents to unbundling, it can also cause issues with proving wire (fibre) speed services and challenges in meeting QoS SLAs. Wherever possible TUANZ would advocate the use of P2P architecture.

Question 26
Do you agree with the generic definition of the terms interconnection and access? If not, what would be the alternative definitions?

The generic definition is fine however TUANZ would suggest inter-network or inter-carrier to interconnection is a clearer definition.

Question 27
Do you agree with the pricing concepts outlined for NGN? What other pricing mechanisms could be applied? Customers could purchase capacity?

As in our answer to Q24, TUANZ considers the hardest part of implementing any pricing construct based upon usage will be the technical implementation of a mechanism able to identify any packet and bill the relevant user accordingly – particularly in multicast environments such as streaming video. For this reason capacity provides a simpler alternative.

Question 28

What additional factors have to be taken into account with regards to point of interconnection in an NGN environment and what is their effect?

A consistent QoS interface is essential. Without it, Carriers' Service Level Agreements for large corporate end users will be next to impossible to match and meet.

Addressing has to be managed at a high level and if NGNs are to be interlinked at the core then the use of IPv6 will inevitably need to replace IPv4. Carriers will not be able to use RFC1918 addressing in their cores.

Question 29
What are the implications for these issues in New Zealand? Are there specific regulatory issues anticipated?

TUANZ members consider that as the world tends towards a meshed NGN core, effectively building another, much higher speed Internet with controls, so concerns around content protection, intellectual rights etc will increase.

The existing regulatory and policy agencies are probably not geared up to deal with the implications a meshed NGN brings and may well require guidance from those countries already down the track.

Question 30
What additional factors have to be taken into account and what is their effect?
None identified.

Ernie Newman
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