



## **Christchurch City Networks Limited**

Response to Commission Discussion Paper on Next  
Generation Networks

**Public Version**  
(There is no Confidential Version)

13 February 2009

## **Introduction**

CCNL welcome the opportunity to provide comment on the subject of 'Next Generation Networks'. New Zealand has an opportunity to transition to a complete all IP network which can transform the service market offering great value to the end user.

Industry discussion, consultation, debate is needed to ensure the resulting solution drives viable investment delivering expected returns (value) to both the investor and the end user.

CCNL has limited its response to questions asked by the Commission where it considers it has a degree of expertise and/or knowledge.

## **Commerce Commission Questions**

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

The underlying concept of an NGN network is that it can convey a number of services over a single core/access platform to the end users. The outcome of this delivery is the presentation of a range of services to the end user, and more importantly a range of service providers. To this point, the principles that underpin NGN issues must always be end user centric, allowing them freedom of choice in terms of service and service provider.

The principles generally achieve this, promoting long term benefit for the end user via healthy investment in NGN infrastructure ideally with self regulation in regard to technical issues.

Adding the word 'open' before 'access networks' in the second principle sets the foundation for maximum capability, control and flexibility transfer to the service provider and end user and not the access network owner or operator.

Also consideration may be given to strengthening the third principle by appending to it .....and providing the end user with choice.

**Question 6** - Is industry consultation necessary on network design for NGN?

While the concept of NGNs offer the possibility of the end user receiving various services seamlessly, the end to end design for all services is complex. Seamless inter-operability between networks, service providers, services and end user devices is critical and affords the end user choice and lower barriers of entry for service providers, which in turn drives innovation and competition at the service layer.

The key issue is to achieve simplicity and consistency in the 'common/commodity' components (potential bottleneck assets, ie, uneconomic to replicate) in the technology solution. This would typically occur primarily at the access layer (wired) (including north and south interfaces) and potentially within the national/regional core network allowing service provider entry.

**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?

"Open Access" is a term that is used on a regular basis within the industry around the globe and in New Zealand. Many organisations/people have their own views as to what the term actually means and this meaning is usually underpinned by their own business purpose.

One component of "Open Access" which is generally accepted by all is that the price and terms of the products and services are the same for ALL users.

However, the above is superficial in the context of an NGN and the main driver for the creation of open access networks is to disaggregate the vertically integrated technology stack usually owned by the incumbents creating a position of market power for them. Therefore open access networks are the de-layering of this technology stack and the subsequent offering of unencumbered access to the 'raw' capability of the horizontal layers (layers in this context are the ISO layers).

Many in the industry will claim "Open Access" status as they claim they offer layer 1, layer 2 etc, services and therefore de-layering has occurred.

Before we go further, let's take a couple of steps back to the vertically integrated technology stack and understand why this stifled service innovation and competition. Simply put, the owner of the technology stack sets the parameters, policies and functionality of the technology which confines/constrains the service providers ability to innovate and offer value to the end user. This can be as simple as not passing through end user CoS parameters, not allowing certain packet sizes, not allowing VLAN stacking, etc. All enforce restrictions upon service provider via a bottle neck asset.

The purest form of open access network is Dark Fibre, simply terminated at points the end user requires offering unlimited bandwidth, functionality and control to the end user. However, investment intensity demands some form of aggregation to improve underlying economics which suggest complementing Dark Fibre with Raw Ethernet Bit-Stream Access (REBSA). Care must be taken that the REBSA product is transparent and while it may be dimensioned in regard to bandwidth, it must be OPEN in regard to control, functionality and flexibility.

Network owners offering Open Access networks have the choice as to what level they OPEN their network, this could be at Layer 2, Layer 1 and/or Layer 0 (duct). Offering 1, 2 or all 3 of these options constitutes being Open Access, of course assuming access is unencumbered.

In conclusion from a technical perspective, an Open Access network offers unencumbered access to capability within layer 0, 1 & 2 of the ISO model.

An additional point is that the owner/operator of the Open Access network would normally not deliver services to the end user therefore maintaining a position of net-neutrality.

One final point, although from a technical perspective Open Access networks drive innovation and competition this can be stifled by unrealistic commercial terms. Commercial terms requiring organisations to take unlimited liability (indemnity - direct and consequential) is clearly a disincentive to investment, competition and innovation.

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

Any investment must attract a return that is aligned to the risk being taken. This level of return will vary depending on the nature of the organisation, each organisation has its own view on acceptable risk profiles in regard to investment.

Large investments which are dependent of technology evolution paths, user demand uptake and predetermined pricing regimes resulting in long pay back periods, even at low RoI expectations are challenging investment decisions.

Clearly the FTTH access network (including customer drop and CPE) falls into this category for the above reasons. Population density and healthy service competition has seen investment in this area overseas but the nature of population spread/density and the presence of numerous service providers (although changing), even within the major cities makes the overall economics very challenging in New Zealand.

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**Question 10**

- i. Do you agree that cost savings are one of the core drivers for NGN deployment in New Zealand?
- ii. How will competition enable innovation?

Cost saving as a driver for NGN deployment is usually true for the incumbent, the owner of many separate legacy platforms which can be reduced down to a few and the eventual replacement of its aging copper infrastructure. This in turn frees up surplus real estate which can generate further value for the incumbent by way of disposal or ongoing leasing. It is doubtful as to whether significant cost savings or other forms of value uplift will be seen as drivers for NGN deployment.

Normal market dynamics will take hold here, access to affordable open capability will lower barriers of entry, create a platform for innovation, and therefore increase the number of market participants. Business growth of these participants will have a correlation to market share (size of wallet) which can be achieved through innovation. IT&T technology is a very innovative 'tool set' when roadblocks are removed.

If the NGN is delivered as a simple, truly open access service, then it will (on its own) be perceived as a commodity service. Innovation will therefore occur as a result of competition for Service Provider differentiation.

**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 the truth was to be known then both are probably true. The emphasis industry leaders put on either of the points is usually representative of their respective organisation position/strategy.

Two important factors need to be considered in this area.

Firstly it is true that innovation to a degree is stifled by the current technical broadband limitations and/or product design. If these limitations were removed as a result of building appropriate pipes and products (wired or wireless) then innovation would create additional value over and above today's value. How much value is debatable as this is a classic 'chicken and egg' situation.

Secondly, if fibre is the end game (wired perspective only) then with a correctly positioned payback period coupled with an appropriate return on

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investment level a degree of investment risk can be taken and a build it and they will come approach is justified.

The answer is somewhere in the middle of the two stated points in the question and by focussing on demand points that have a wider impact on community in regard to value creation in the first instance a deployment strategy that lessens investment risk can be taken.

**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 your view is the best method for allocating costs, i.e., should it be based on volume, minutes or new drivers such as capacity?

The investment required in the access network and to a lesser extent in the backhaul network is significant and if this infrastructure is 'shared' then it would correct to assume a higher proportion of network cost is shared.

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

P2P offers significantly more future proofing than PON by way of 'unlimited' speed per end user (not shared infrastructure) and offers a technologically neutral topology. P2P CPE is a mass market product and is actively deployed in Greenfield deployments around the world.

P2P is fibre rich and network architectures and designs need to ensure optimal fibre distances even though the potential circuit lengths out reach PON. This may be why incumbents favour PON as it allows them to evolve their networks towards FTTH without having the scalability that will provide true future proofing of the layer 0 and 1 infrastructure.

PON requires less fibres in the field which naturally requires less space in existing ducting infrastructure, poles and CO locations. This is a major advantage for incumbents who have limited (if any) duct space remaining due to limited or inappropriate investment in their copper based networks of the past. However, there is a downside, limitations arise with the provisioning of services such as IPTV, interoperability complexity is higher, bandwidth contention problems experienced today still exist for the future, to name a few. PON is a good strategy for LLU prevention in the fibre access network of the future and is usually deployed by incumbents.

Arguably, P2P is a little more expensive to deploy but many argue the difference is immaterial. Often excluded from the costing equation is the additional cost to operate and maintain a PON network. The presence of field located electronics coupled with the shared nature of the network drives higher operational costs, fault diagnostics, replacement, provisioning complexity, which when analysed to the required level of detail may produce higher life time costs for a PON network than a P2P network.

Finally, a P2P network allows the possibility of “Open Access” down to the fibre level whereas PON excludes this possibility.

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